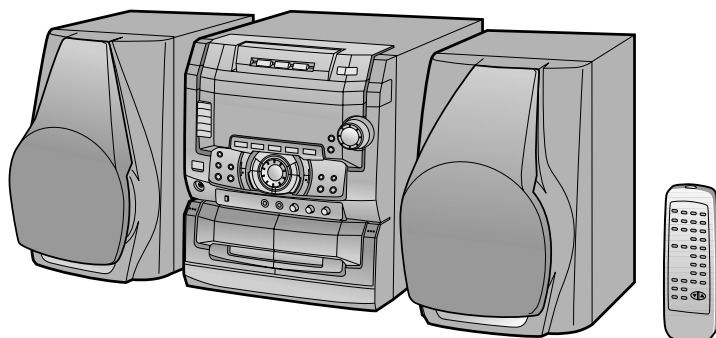


SHARP SERVICE MANUAL

No.S8875CDC449W/



CD-C449W CD-K449W

CD-C449W mini component system consisting of
CD-C449W mini component system and
CP-C449 speaker system.

CD-K449W mini component system consisting of
CD-K449W mini component system and
CP-C449 speaker system.



● **SRS**, the SRS Logo (●) and the **SOUND RETRIEVAL SYSTEM** are registered trademarks of SRS Labs, Inc. in the United States.

• In the interests of user-safety the set should be restored to its original condition and only parts identical to those specified be used.

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SECTION	CD-C449W	CD-K449W
KARAOKE CIRCUIT	X	○

SAFETY PRECAUTION FOR SERVICE MANUAL

WARNINGS

THE AEL (ACCESSIBLE EMISSION LEVEL) OF THE LASER POWER OUTPUT IS LESS THAN CLASS 1 BUT THE LASER COMPONENT IS CAPABLE OF EMITTING RADIATION EXCEEDING THE LIMIT FOR CLASS 1. THEREFORE IT IS IMPORTANT THAT THE FOLLOWING PRECAUTIONS ARE OBSERVED DURING SERVICING TO PROTECT YOUR EYES AGAINST EXPOSURE TO THE LASER BEAM.

- 1-WHEN THE CABINET IS REMOVED, THE POWER IS TURNED ON WITHOUT A COMPACT DISC IN POSITION AND THE PICK-UP IS ON THE OUTER EDGE THE LASER WILL LIGHT FOR SEVERAL SECONDS TO DETECT A DISC. DO NOT LOOK INTO THE PICK-UP LENS.
- 2-THE LASER POWER OUTPUT OF THE PICK-UP UNIT AND REPLACEMENT SERVICE PARTS ARE ALL FACTORY PRE-SET BEFORE SHIPMENT.
DO NOT ATTEMPT TO RE-ADJUST THE LASER PICK-UP UNIT DURING REPLACEMENT OR SERVICING.
- 3-UNDER NO CIRCUMSTANCES STARE INTO THE PICK-UP LENS AT ANY TIME.
- 4-CAUTION-USE OF CONTROLS OR ADJUSTMENTS, OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

CAUTION

CLASS 1 LASER PRODUCT
APPAREIL À LASER DE CLASSE 1
PRODUCTO LASER DE CLASE 1

- This Mini Component System is classified as a CLASS 1 LASER product.
- The CLASS 1 LASER PRODUCT label is located on the rear cover.
- Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

As the laser beam used in this compact disc player is harmful to the eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only.

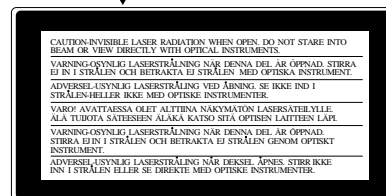
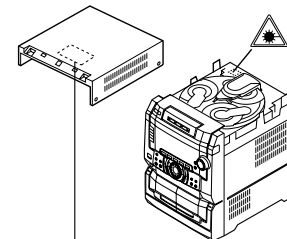
Laser Diode Properties

Material: GaAlAs

Wavelength: 780 nm

Emission Duration: continuous

Laser Output: max. 0.6 mW



VARO ! Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING! Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

SPECIFICATIONS

CD-C449W/K449W

● General

Power source: AC 110/127/220/230-240 V,
50/60 Hz

Power consumption: 120 W

Dimensions: Width; 270 mm (10-5/8")
Height; 316 mm (12-1/2")
Depth; 343 mm (13-1/2")

Weight: 9.2 kg (20.3 lbs.)

● Amplifier section

Output power: PMPO; 1200 W
MPO; 240 W (120 W + 120 W)
(10 % T.H.D.)
RMS; 150 W (75 W + 75 W)
(10 % T.H.D.)

Output terminals: Speakers; 8 ohms
Headphones; 16-50 ohms
(recommended; 32 ohms)
CD digital output (optical)

Input terminals: Video/Auxiliary (audio signal)
1/2; 500 mV/47 kohms
Microphone 1/2; 1 mV/4.7 kohms
(CD-K449W only)

● Tuner section

Frequency range: FM; 88 - 108 MHz
SW2; 9.5 - 21.85 MHz
SW1; 3.2 - 7.3 MHz
MW; 531 - 1,602 kHz

● Cassette deck section

Frequency response: 50-14,000 Hz (Normal tape)

Signal/noise ratio: 55 dB (TAPE 1, playback)
50 dB (TAPE 2, recording/
playback)

Wow and flutter: 0.15 % (WRMS)

● Compact disc player section

Type: 3-disc multi-play compact disc
player

Signal readout: Non-contact, 3-beam semi-
conductor laser pickup

D/A converter: 1-bit D/A converter

Frequency response: 20 - 20,000 Hz

Dynamic range: 90 dB (1 kHz)

CP-C449

● Speaker section

Type: 3-way type [130 mm (5-1/8")
woofer, 50 mm (2") tweeter and
super tweeter]

**Maximum input
power:** 150 W

Impedance: 8 ohms

Dimensions: Width; 220 mm (8-11/16")
Height; 316 mm (12-1/2")
Depth; 284 mm (11-3/16")

Weight: 3.6 kg (7.9 lbs.)/each

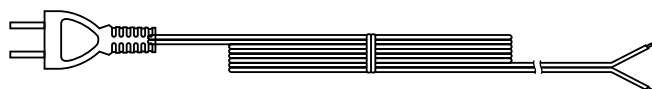
VOLTAGE SELECTION

The voltage selector is located on the AC voltage selector box. If adjustment is necessary, use a screwdriver in order to turn the selector in either direction until the correct voltage figure is displayed in the window next to the adjustment screw.

QACCA0001AW00



AQCCJ0003AW00



QACCE0008AW00

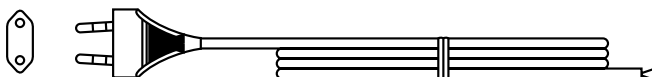


Figure 2 AC POWER SUPPLY CORD AND AC PLUG ADAPTOR

SPECIFICATIONS

CD-C449W/K449W

● General

Power source: AC 110/127/220/230-240 V,
50/60 Hz

Power consumption: 120 W

Dimensions: Width; 270 mm (10-5/8")
Height; 316 mm (12-1/2")
Depth; 343 mm (13-1/2")

Weight: 9.2 kg (20.3 lbs.)

● Amplifier section

Output power: PMPO; 1200 W
MPO; 240 W (120 W + 120 W)
(10 % T.H.D.)
RMS; 150 W (75 W + 75 W)
(10 % T.H.D.)

Output terminals: Speakers; 8 ohms
Headphones; 16-50 ohms
(recommended; 32 ohms)
CD digital output (optical)

Input terminals: Video/Auxiliary (audio signal)
1/2; 500 mV/47 kohms
Microphone 1/2; 1 mV/4.7 kohms
(CD-K449W only)

● Tuner section

Frequency range: FM; 88 - 108 MHz
SW2; 9.5 - 21.85 MHz
SW1; 3.2 - 7.3 MHz
MW; 531 - 1,602 kHz

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Signal/noise ratio: 55 dB (TAPE 1, playback)
50 dB (TAPE 2, recording/
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CP-C449

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Impedance: 8 ohms

Dimensions: Width; 220 mm (8-11/16")
Height; 316 mm (12-1/2")
Depth; 284 mm (11-3/16")

Weight: 3.6 kg (7.9 lbs.)/each

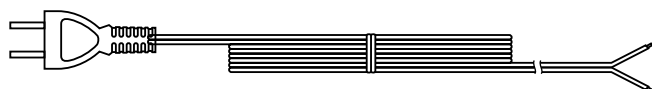
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QACCA0001AW00



AQCCJ0003AW00



QACCE0008AW00

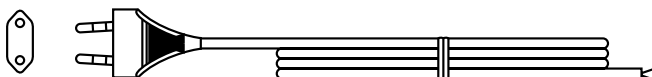


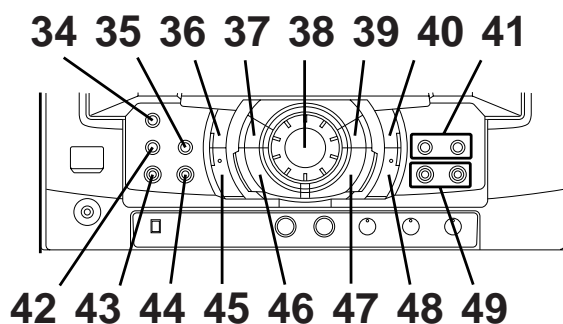
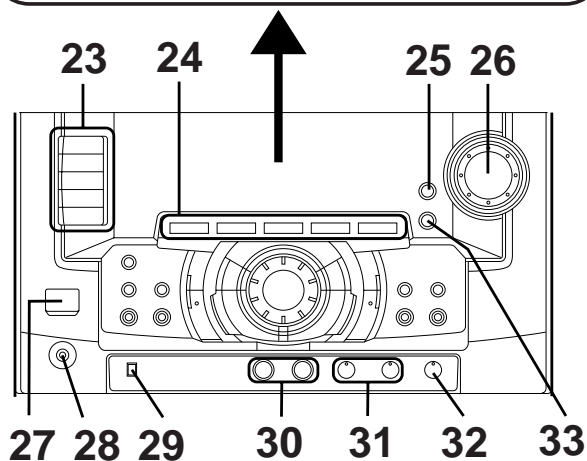
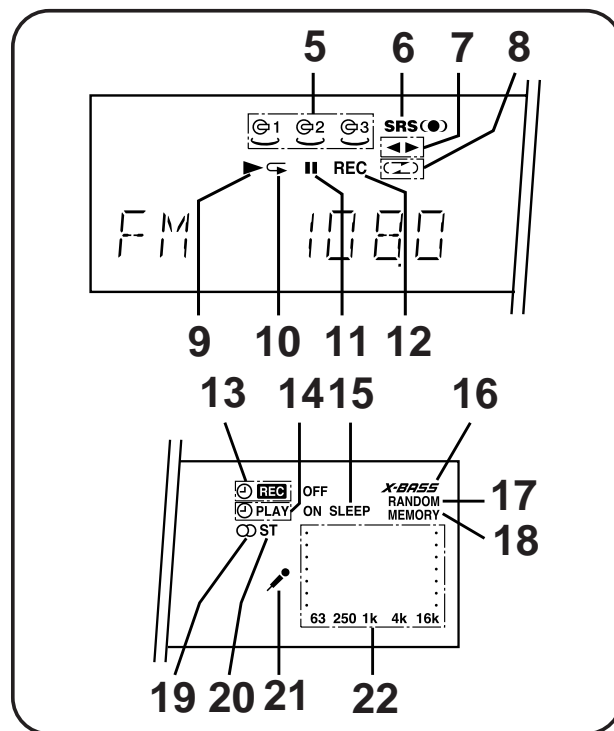
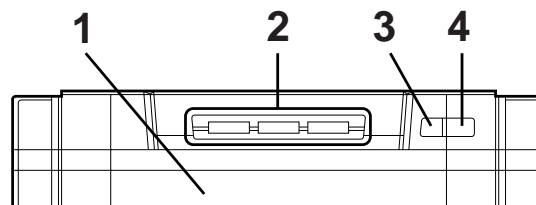
Figure 2 AC POWER SUPPLY CORD AND AC PLUG ADAPTOR

NAMES OF PARTS

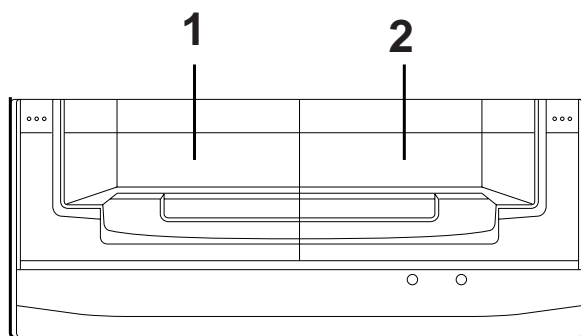
CD-C449W/K449W

■ Front panel

1. (CD) Disc Tray
2. (CD) Disc Number Select Buttons
3. (CD) Disc Skip Button
4. (CD) Open/Close Button
5. (CD) Disc Number Indicators
6. SRS Indicator
7. (TAPE 2) Direction Indicators
8. (TAPE 2) Reverse Mode Indicator
9. (CD) Play Indicator
10. (CD) Repeat Play Indicator
11. (CD) Pause Indicator
12. (TAPE 2) Record Indicator
13. Timer Record Indicator
14. Timer Play Indicator
15. Sleep Indicator
16. Extra Bass Indicator
17. (CD) Random Play Indicator
18. (CD/TUNER) Memory Indicator
19. (TUNER) FM Stereo Indicator
20. (TUNER) FM Stereo Mode Indicator
21. Karaoke Indicator (CD-K449W Only)
22. Spectrum Analyzer
23. Function Selector Buttons
24. Equalizer Mode Selector Buttons
25. Extra Bass Button
26. Volume Control
27. On/Stand-by Button
28. Headphone Socket
29. Karaoke Maker Switch (CD-K449W Only)
30. Microphone Sockets (CD-K449W Only)
31. Microphone Level Controls (CD-K449W Only)
32. Digital Echo Control (CD-K449W Only)
33. 3D Surround/Demo Mode Button
34. Clock Button
35. Sleep Button
36. (TAPE 2) Reverse Mode Button
37. (CD) Pause Button
38. Jog Dial
39. (CD/TAPE) Stop Button
40. (TAPE) Record Pause Button
41. Balance Control Buttons
42. Timer Button
43. Memory Button
44. (CD) Clear Button
45. (CD) Track Down/Review Button
46. (TAPE 2) Fast Wind Button
47. (TUNER) Tuning Down Button
48. (TAPE 2) Reverse Play Button
49. (CD) Play/Repeat Button
50. (TAPE 1) Play Button
51. (TAPE 2) Forward Play Button
52. (CD) Track Up/Cue Button
53. (TAPE 2) Fast Wind Button
54. (TUNER) Tuning Up Button
55. Editing Speed Selector Buttons

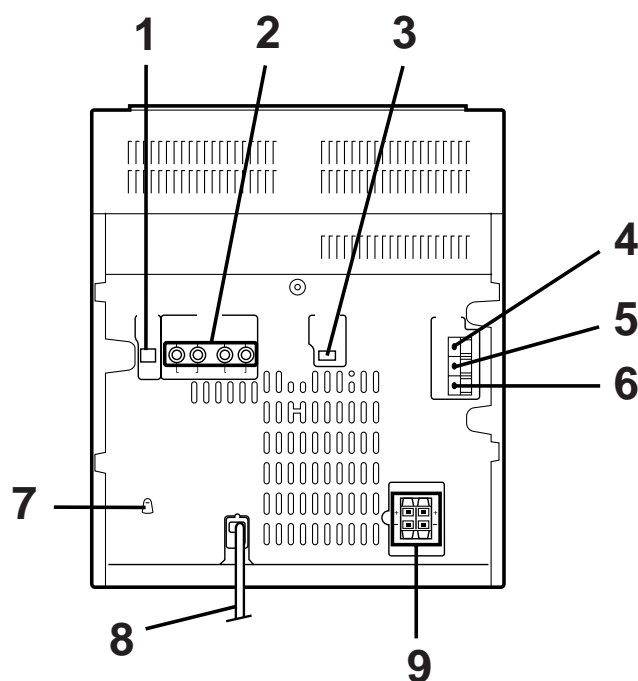


1. (TAPE 1) Cassette Compartment
2. (TAPE 2) Cassette Compartment



■ Rear panel

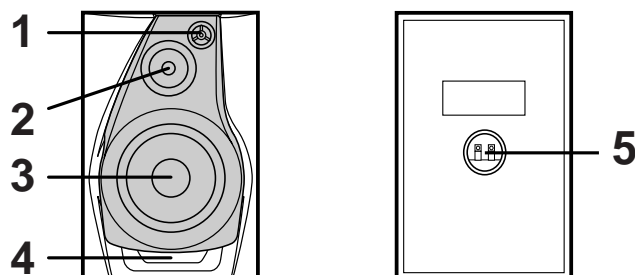
1. CD Digital Output Socket
2. Video/Auxiliary (Audio Signal) Input Sockets
3. Span Selector Switch
4. FM 75 Ohms Aerial Terminal
5. Aerial Earth Terminal
6. SW1/SW2/MW Aerial Terminal
7. AC Voltage Selector
8. AC Power Lead
9. Speaker Terminals



CP-C449

■ Speaker section

1. Super Tweeter
2. Tweeter
3. Woofer
4. Bass Reflex Ducts
5. Speaker Terminals



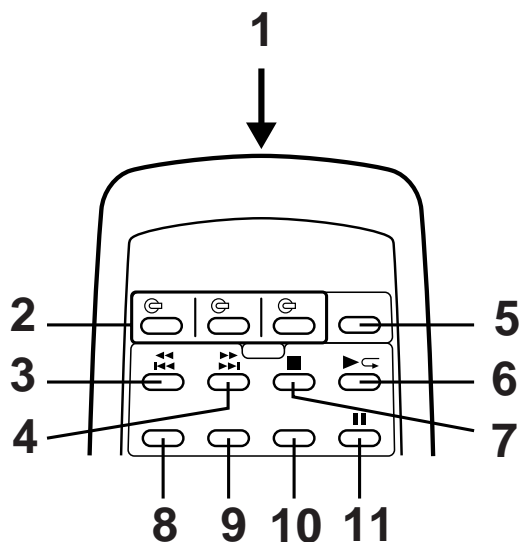
CD-C449W/K449W

■ Remote control

1. Remote Control Transmitter LED

● CD control section

2. Disc Number Select Buttons
3. Track Down/Review Button
4. Track Up/Cue Button
5. Disc Skip Button
6. Play/Repeat Button
7. Stop Button
8. Memory Button
9. Clear Button
10. Random Button
11. Pause Button

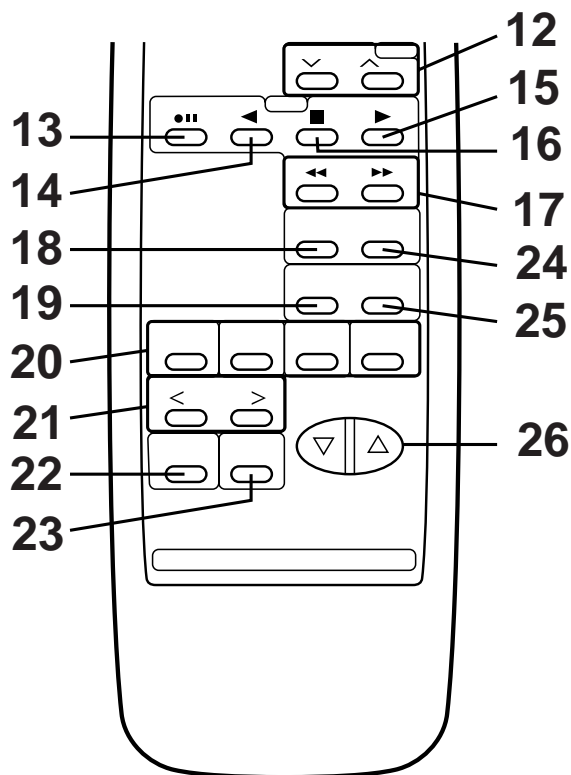


● Tuner control section

12. Preset Up/Down Buttons

● Tape control section

13. (TAPE 2) Record Pause Button
14. (TAPE 2) Reverse Play Button
15. (TAPE 1) Play Button
16. (TAPE 2) Forward Play Button
17. (TAPE 2) Fast Wind Buttons



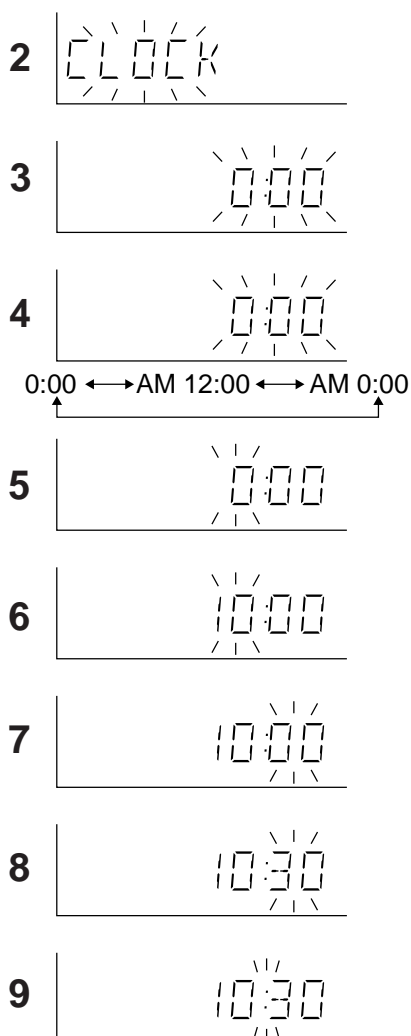
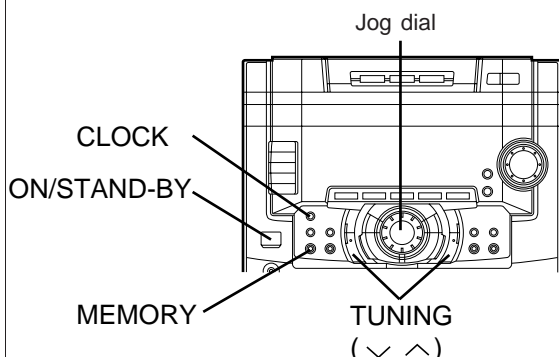
● Common section

18. 3D Surround Pass Button
19. Equalizer Mode Button
20. Function Selector Buttons
21. Balance Control Buttons
22. On/Stand-by Button
23. Dimmer Button
24. 3D Surround Mode Button
25. Extra Bass Button
26. Volume Up/Down Buttons

OPERATION MANUAL

SETTING THE CLOCK

In this example, the clock is set for the 24-hour (0:00) system.



1 Press the ON/STAND-BY button to enter the stand-by mode.

2 Press the CLOCK button.

3 Within 5 seconds, press the MEMORY button.

4 Turn the jog dial to select the time display mode.

"0:00" → The 24-hour display will appear.
(0:00 - 23:59)

"AM 12:00" → The 12-hour display will appear.
(AM or PM 12:00 - 11:59)

"AM 0:00" → The 12-hour display will appear.
(AM or PM 0:00 - 11:59)

● Note that this can only be set when the unit is first installed or it has been reset (see page 28).

5 Press the MEMORY button.

6 Adjust the hour by turning the jog dial.

● When the jog dial is turned one click clockwise, the time will increase by 1 hour. When it is turned one click anti-clockwise, the time will decrease by 1 hour.
Keep turning the jog dial to change the time continuously.

● When the 12-hour display is selected, "AM" will change automatically to "PM".

7 Press the MEMORY button.

8 Adjust the minutes by turning the jog dial.

● When the jog dial is turned one click clockwise, the time will increase by 1 minute. When it is turned one click anti-clockwise, the time will decrease by 1 minute.
Keep turning the jog dial to change the time continuously.

● The hour setting will not advance even if minutes advance from "59" to "00".

9 Press the MEMORY button.

● The clock starts operating from "0" seconds. (Seconds are not displayed.)

Note:

● In the event of a power failure or when the AC power lead is disconnected, the clock display will go out.
When the AC power supply is restored, the clock display will flash on and off to indicate the time when the power failure occurred or when the AC power lead was disconnected.
If this happens, follow the procedure below to change the clock time.

To change the clock time:

When the unit is in the stand-by mode:

① Press the MEMORY button.

② Perform steps 6 - 9 above.

When the unit is on:

① Press the CLOCK button.

② Within 5 seconds, press the MEMORY button.

③ Perform steps 6 - 9 above.

To see the time display:

Press the CLOCK button.

● The time display will appear for about 5 seconds.

To change the time display mode:

① Perform steps 1 - 2 in the section "RESETTING THE MICRO-COMPUTER", on page 28.

② Perform steps 1 - 9 above.

FM/MW interval (span)

The International Telecommunication Union (ITU) has established that member countries should maintain either a 10 kHz or a 9 kHz interval between broadcasting frequencies of any MW station. The illustration shows the 9 kHz interval zones (regions 1 and 3), and the 10 kHz interval zone (region 2).

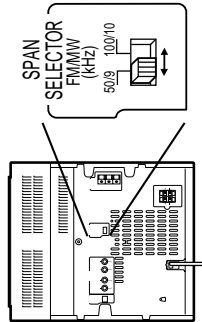
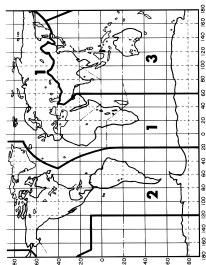
Before using the unit, set the SPAN SELECTOR switch (on the rear panel) to MW tuning interval (span) of your area.

To change the tuning zone:

- 1 Press the ON/STAND-BY button to enter the stand-by mode.
- 2 Set the SPAN SELECTOR switch to "50/9" for 9 kHz MW interval (50 kHz FM interval), and "100/10" for 10 kHz MW interval (100 kHz FM interval).
- 3 Press the ON/STAND-BY button whilst holding down the button and the FLAT button.

Caution:

- The operation explained above will erase all data stored in memory including clock and timer settings, and tuner and CD presets.



RESETTING THE MICROCOMPUTER

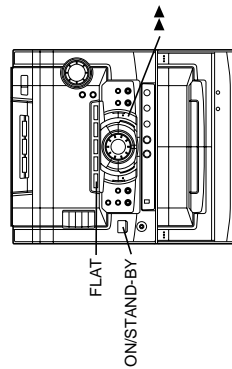
Reset the microcomputer under the following conditions:

- To erase all of the stored memory contents (clock and timer settings, and tuner and CD presets).
- If the display is not correct.
- If the operation is not correct.

- 1 Press the ON/STAND-BY button to enter the stand-by mode.
- 2 Press the ON/STAND-BY button whilst holding down the button and the FLAT button.

Caution:

- The operation explained above will erase all data stored in memory including clock and timer settings, and tuner and CD presets.



(Continued)

Remote control

- When inserting or removing the batteries, push them towards the battery terminal.
- Installing the batteries incorrectly may cause the unit to malfunction.

Precautions for battery use:

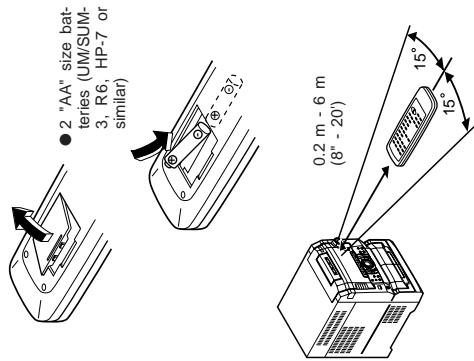
- Insert the batteries according to the direction indicated in the battery compartment.
- Replace all old batteries with new ones at the same time.
- Do not mix old and new batteries.
- Remove the batteries if they are weak or if the unit will not be used for long periods of time. This will prevent potential damage due to battery leakage.

Caution:

Do not use rechargeable batteries (nickel-cadmium battery, etc.).

Notes concerning use:

- Replace the batteries if the operating distance is reduced or if the operation becomes erratic.
- Periodically clean the transmitter LED on the remote control and the sensor on the main unit with a soft cloth.
- Exposing the sensor on the main unit to strong light may interfere with operation. Change the lighting or the direction of the unit.
- Keep the remote control away from moisture, excessive heat, shock, and vibrations.



DISASSEMBLY

Caution on Disassembly

Follow the below-mentioned notes when disassembling the unit and reassembling it, to keep it safe and ensure excellent performance:

1. Take cassette tape and compact disc out of the unit.
2. Be sure to remove the power supply plug from the wall outlet before starting to disassemble the unit.
3. Take off nylon bands or wire holders where they need to be removed when disassembling the unit. After servicing the unit, be sure to rearrange the leads where they were before disassembling.
4. Take sufficient care on static electricity of integrated circuits and other circuits when servicing.

CD-C449W/K449W

STEP	REMOVAL	PROCEDURE	FIGURE
1	Top Cabinet	1. Screw (A1) x4	9-1
2	Side Panel (Left/right)	1. Screw (B1) x8	9-1
3	CD Player Unit/ CD Tray Cover	1. Turn on the power supply, open the disc tray, take out the CD cover, and close. (Note 1) 2. Hook (C1) x3 3. Hook (C2) x2 4. Screw (C3) x1 5. Socket (C4) x3	9-2
4	Tuner PWB	1. Socket (D1) x1 2. Screw (D2) x5	10-1
5	Rear Panel	1. Screw (E1) x11	9-2 10-1
6	Main PWB	1. Flat cable (F1) x2 2. Flat wire (F2) x3 3. Socket (F3) x3 4. Screw (F4) x3	10-1
7	Karaoke PWB (CD-K449W only)	1. Screw (G1) x2	10-2
8	Front Panel	1. Flat wire (H1) x1 2. Screw (H2) x2	10-2
9	Power Amp. PWB	1. Socket (J1) x2 2. Screw (J2) x6	10-2
10	Power Supply PWB	1. Screw (K1) x6	10-3
11	Display PWB	1. Knob (L1) x2 2. Nut (L2) x1 3. Screw (L3) x12	10-4
12	CD Switch PWB	1. Screw (M1) x3	10-4
13	Headphones PWB	1. Screw (N1) x1	10-4
14	Tape Mechanism	1. Screw (P1) x6	10-4
15	Turntable	1. Screw (Q1) x1 2. Cover (Q2) x1	10-5
16	Disc Tlay	1. Screw (R1) x2 2. Guide (R2) x2	10-5
17	CD Servo PWB (Note2)	1. Screw (S1) x1 2. Socket (S2) x4	10-6
18	CD Changer Mechanism	1. Screw (T1) x4	11-1
19	CD Mechanism	1. Screw (U1) x1	11-1

Note 1:

How to open the changer manually. (Fig. 10-3)

1. Then, turn fully the lock lever in the arrow direction through the hole on the loading chassis bottom in this state.
After that, push forward the CD player base.
2. After removing the connector for the optical pickup from the connector wrap the conductive aluminium foil around the front end of connector so as to protect the optical pickup from electrostatic damage.

CD-C477W/K449W

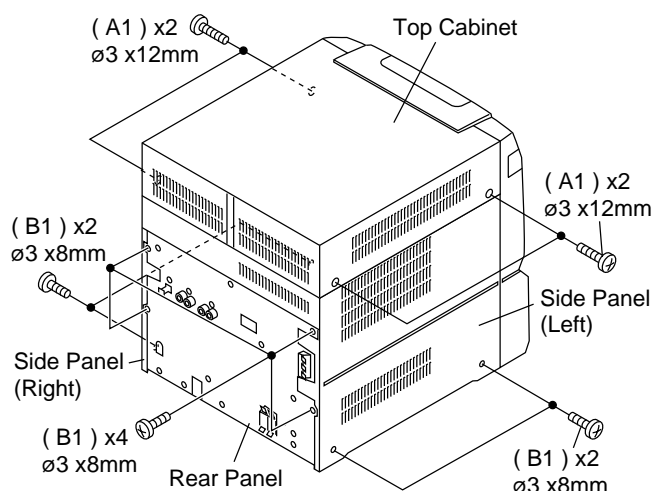


Figure 9-1

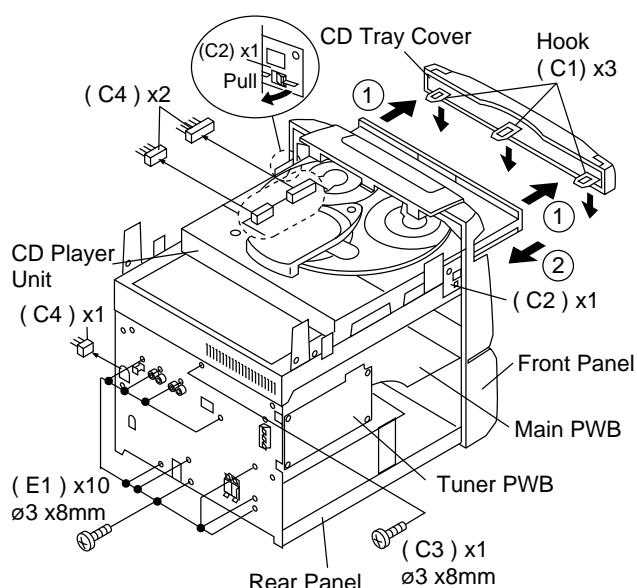


Figure 9-2

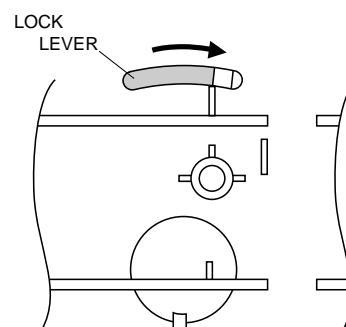


Figure 9-3

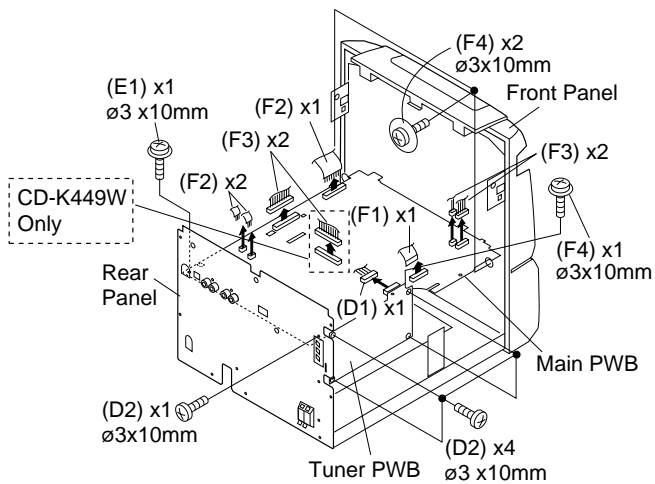


Figure 10-1

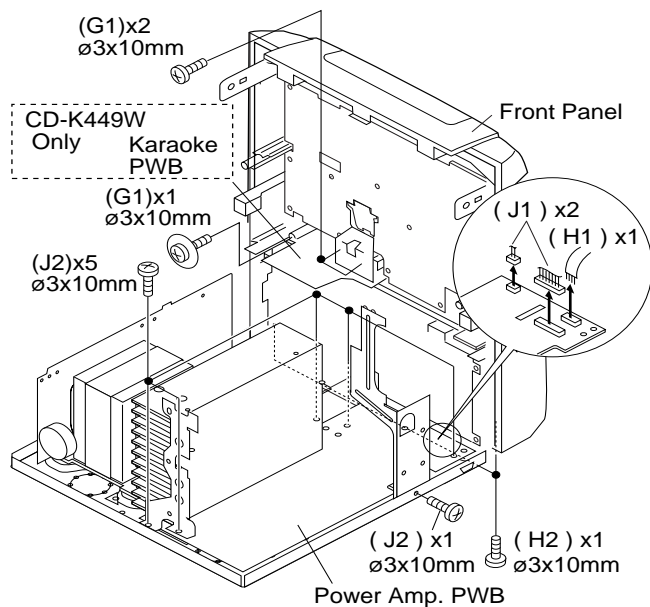


Figure 10-2

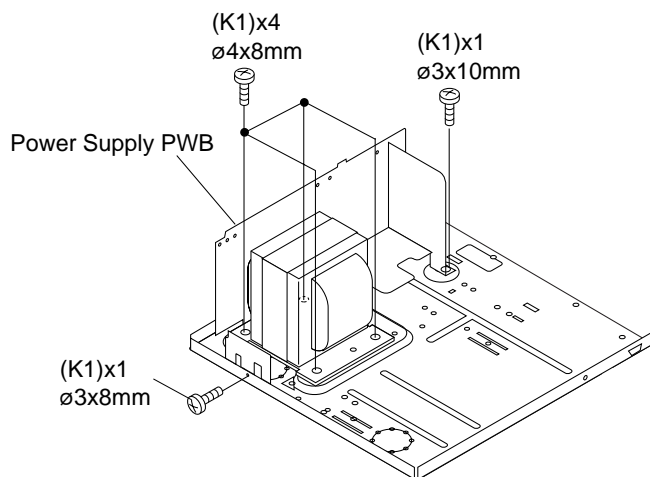


Figure 10-3

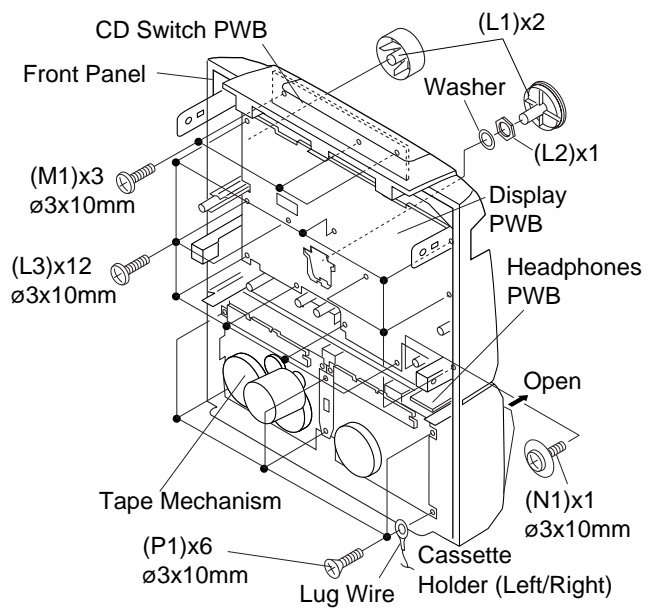


Figure 10-4

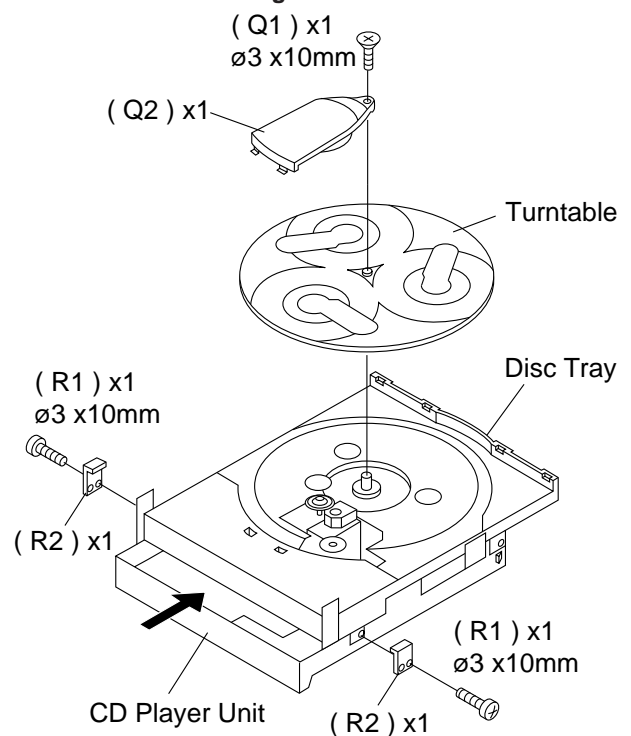


Figure 10-5

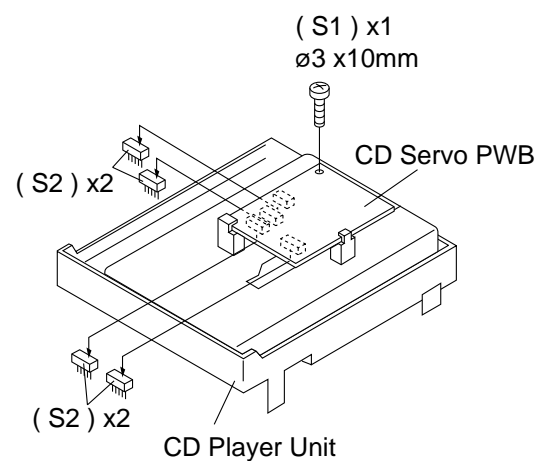
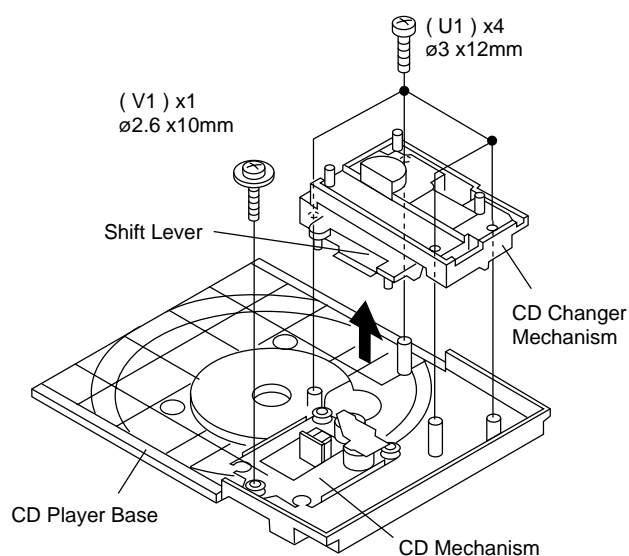


Figure 10-6



Be careful when installing the CD changer mechanism. Install the CD changer mechanism on the CD player base after the shift lever has been set in the highest position.

Figure 11-1

CP-C449			
STEP	REMOVAL	PROCEDURE	FIGURE
1	Front Speaker	1. Net (A1) x1 2. Front Panel (A2) x1 3. Screw (A3) x2 4. Screw (A4) x4 5. Screw (A5) x2	11-2

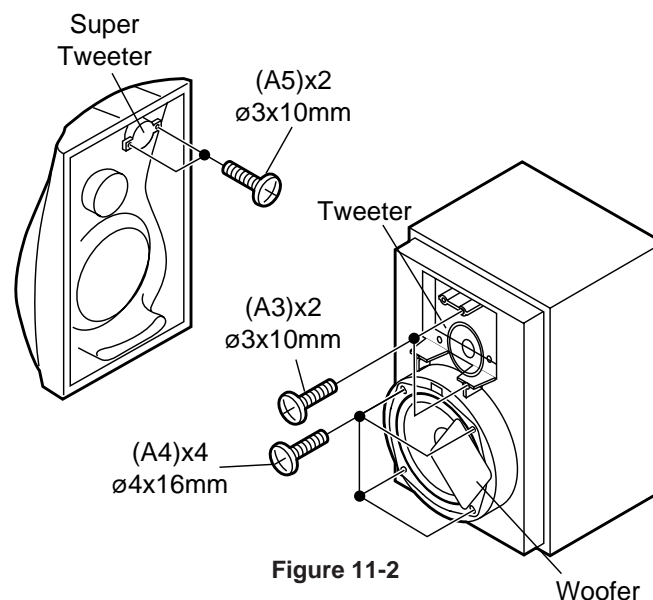
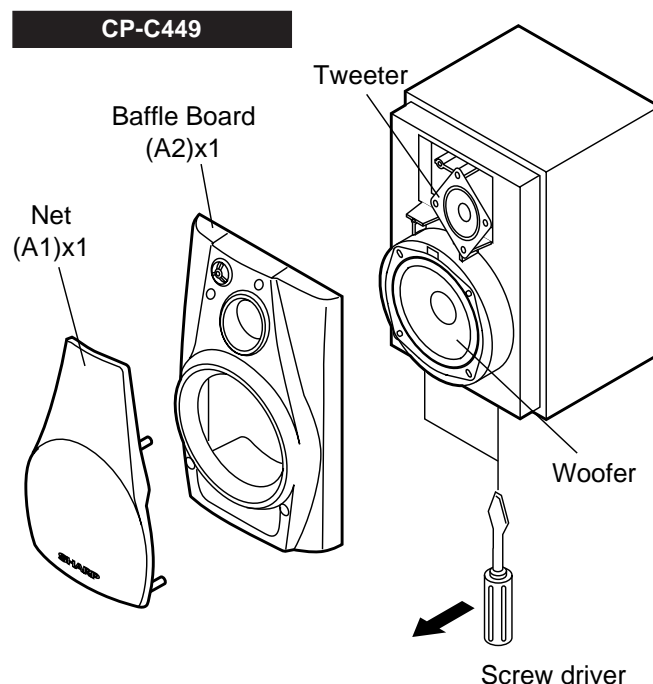


Figure 11-2

REMOVING AND REINSTALLING THE MAIN PARTS

CD MECHANISM SECTION

Perform steps 1, 2, 3, 15, 16, 17 and 19 of the disassembly method to remove the CD mechanism.

How to remove the loading motor (See Fig. 12-1)

1. Remove the screws (A1) x 2 pcs., to remove the loading motor.

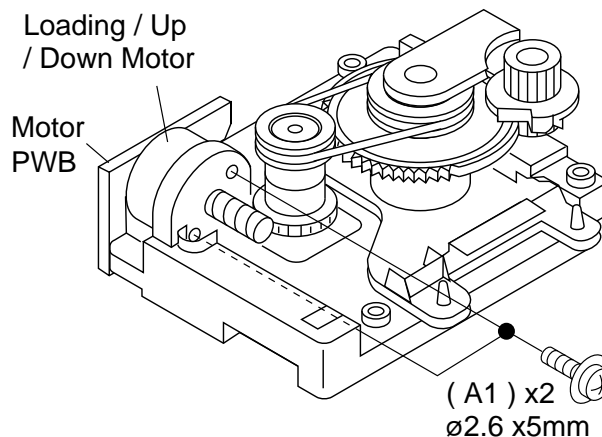


Figure 12-1

How to remove the pickup (See Fig. 12-2)

1. Remove the screws (B1) x 2 pcs., to remove the shaft (B2).
2. Remove the stop washer (B3) x 1 pc., to remove the gear (B4).
3. Remove the pickup.

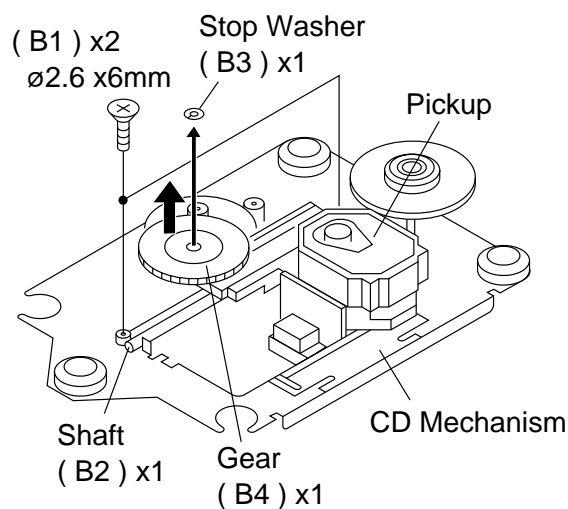


Figure 12-2

Note

After removing the connector for the optical pickup from the connector wrap the conductive aluminium foil around the front end of connector so as to protect the optical pickup from electrostatic damage.

ADJUSTMENT

MECHANISM SECTION

• Driving Force Check

Torque Meter	Specified Value
Play: TW-2412	Tape 1: Over 80 g Tape 2: Over 80 g

• Torque Check

Torque Meter	Specified Value	
	Tape 1	Tape 2
Play: TW-2111	30 to 60 g. cm	30 to 100 g.cm
Fast forward: TW-2231	—	50 to 100 g.cm
Rewind: TW-2231	—	50 to 100 g.cm

• Tape Speed

	Test Tape	Adjusting Point	Specified Value	Instrument Connection
Normal speed	MTT-111	VRM01	3,000 ± 30 Hz	Speaker terminal (Load resistance: 8 ohms)

TUNER SECTION

fL: Low-range frequency

fH: High-range frequency

• AM IF/RF

Signal generator: 400 Hz, 30%, AM modulated

Test Stage	Frequency	Frequency Display	Setting/Adjusting Parts	Instrument Connection
IF	450 kHz	1,602 kHz	T351	*1
MW Band Coverage	—	531 kHz	(fL): T306 1.1 ± 0.1 V	*2
SW1 Band Coverage	—	3.2 MHz	(fL): T307 2.0 ± 0.1 V	*2
SW1 Band Coverage	—	7.3 MHz	(fH): TC305 7.7 ± 0.2 V	*2
SW2 Band Coverage	—	9.5 MHz	(fL): T308 2.1 ± 0.1 V	*2
SW2 Band Coverage	—	21.85 MHz	(fH): TC304 7.7 ± 0.2 V	*2
MW Tracking	990 kHz	990 kHz	T302	*1
SW1 Tracking	3.9 MHz	3.9 MHz	(fL): T303	*1
SW1 Tracking	7.1 MHz	7.1 MHz	(fH): TC303	*1
SW2 Tracking	11.65 MHz	11.65 MHz	(fL): T304	*1
SW2 Tracking	21.45 MHz	21.45 MHz	(fH): TC302	*1

*1. Input: Antenna, Output: TP302

*2. Input: Antenna, Output: TP301

TAPE MECHANISM PWB

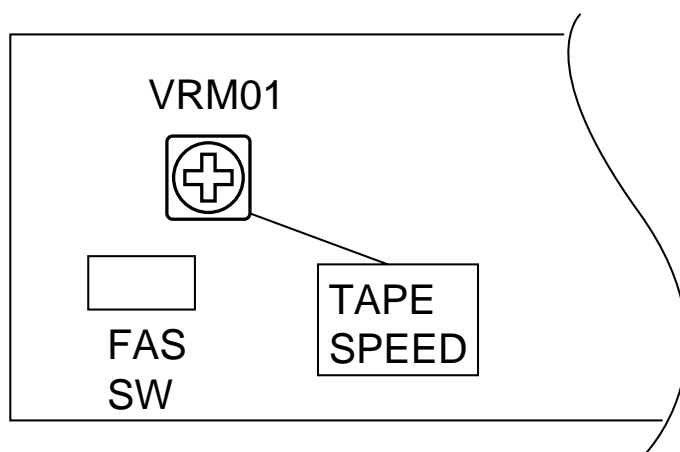


Figure 13

CD-C449W/K449W

• FM RF

Signal generator: 1 kHz, 40 kHz dev, FM modulated

Test Stage	Frequency	Frequency Display	Setting/ Adjusting Parts	Instrument Connection
Band Coverage	—	87.5 kHz	(fL): LT02 3.7 ± 0.1 V	*1
RF	98 MHz 10 - 30 dB	98 MHz	LT01	*2

*1. Input: Antenna, Output: TP301

*2. Input: Antenna, Output: Speaker Terminal

• Setting the Test Mode

Keeping the PAUSE button and TUNER button pressed, turn on POWER. Then, the frequency is initially set in the memory as shown in Table. Call it with the PRESET button to use it for adjustment and check of tuner circuit.

Preset No.	FM	Preset No.	MW	Preset No.	SW1	Preset No.	SW2
1	87.50 MHz	6	531 kHz	11	3.2 MHz	16	9.5 MHz
2	108.00 MHz	7	1,602 kHz	12	7.3 MHz	17	21.85 MHz
3	90.00 MHz	8	603 kHz	13	3.9 MHz	18	11.65 MHz
4	106.00 MHz	9	1,404 kHz	14	7.1 MHz	19	21.45 MHz
5	98.00 MHz	10	990 kHz	15	5.06 MHz	20	15.1 MHz
21 ~ 40							

• FM Detection

Signal generator: 10.7 MHz, FM sweep

Test Stage	Frequency	Frequency Display	Setting/ Adjusting Parts	Instrument Connection
IF	10.7 MHz	98 MHz	TT01 (Turn the core of transformer TT01 fully counter-clock wise)	*1

*1. Input: Antenna, Output: TP301

*2. Input: Antenna, Output: Speaker Terminal

• FM Mute Level

Signal generator: 1 kHz, 40 kHz dev., FM modulated

Frequency	Frequency Display	Adjusting Parts	Instrument Connection
98.00 MHz (25 dBμV)	98.00 MHz	VR351 *1	Input: Antenna Output: Speaker Terminal

*1. Adjust so that an output signal appears.

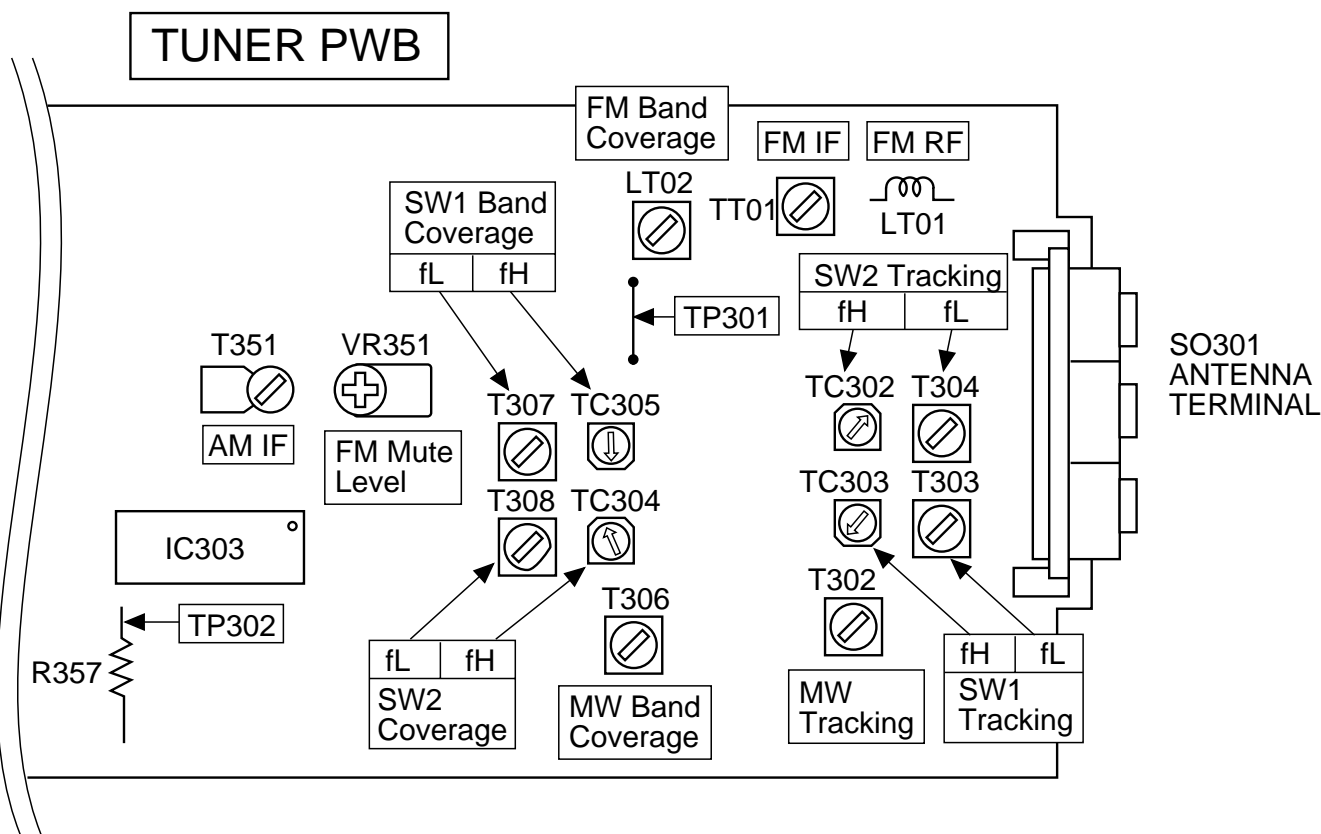


Figure 14 ADJUSTMENT POINTS

TEST MODE

• Setting the test mode

Any one of test mode can be set by pressing several keys as follows.

<REC. PAUSE> + <DISC. SKIP> + <POWER> TEST: CD operation test

• TEST mode

Function — CD test mode

Setting of TEST mode

Indication of CD TST mode (Fig. 15-1)

OPEN/CLOSE operation is manual operation.

The pickup can be moved by using the (▶▶) or (◀◀) key.

IL is not performed.

<MEMORY> LASER ON — <MEMORY> Tracking on the spot. SERVO OFF PLAY — <MEMORY> Tracking on the spot. SERVO ON PLAY — <STOP> STOP

<PLAY> key input — TOC. IL is performed, and the ordinary PLAY is performed. — Press <STOP> key. — Stop
If the following key is pressed during PLAY, it is possible to specify directly any Track No.
<Disc Number 1> key: Track 4
<Disc Number 2> key: Track 9
<Disc Number 3> key: Track 15

Note:

Only in STOP state it is possible to slide the pickup with the (▶▶) or (◀◀) key.

VOL. --- Last memory

BAL. --- CENTER

R.GEQ. --- FLAT

X-BAS --- OFF

Canceling method - POWER OFF

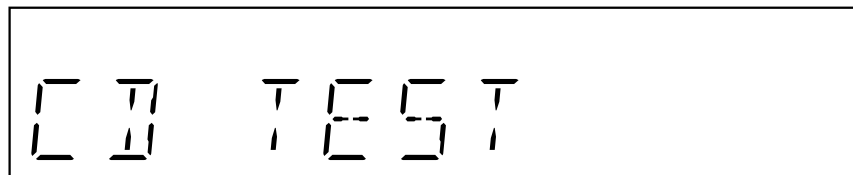


Figure 15-1

CD SECTION

Since this CD system incorporates the following automatic adjustment function, when the pickup is replaced, it is not necessary to readjust it.

Since this CD unit does not need adjustment, the combination of PWB and laser pickup unit is not restricted.

• Automatic adjustment item

1. Focus offset (Fig. 15-2)
2. Tracking offset (Fig. 15-3)
3. E/F balance (tracking error balance) (Fig. 15-4)
4. RF level AGC function (HF level: constant)
5. RF level automatic follow-up of the tracking gain

This automatic adjustment is performed each time a disc is changed. Therefore, each disc is played back using the optimal settings.

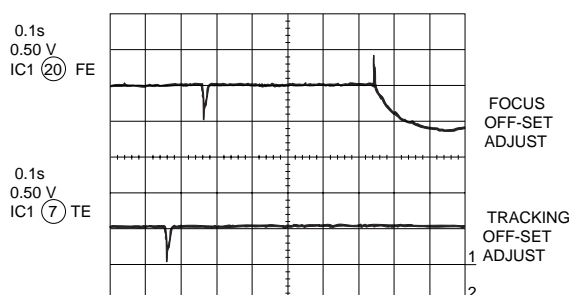


Figure 15-2

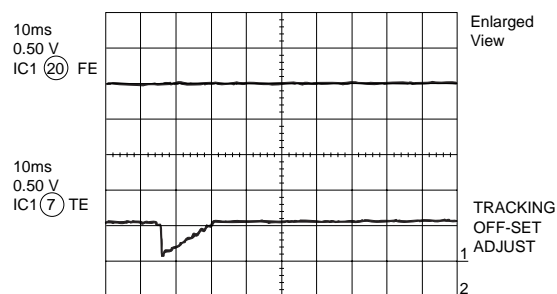


Figure 15-3

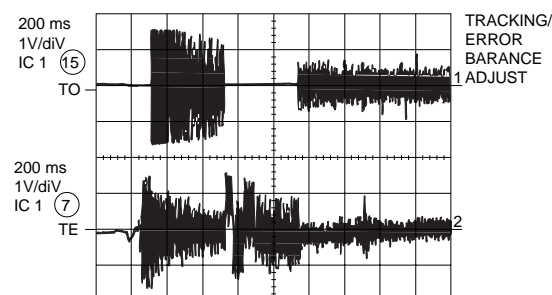
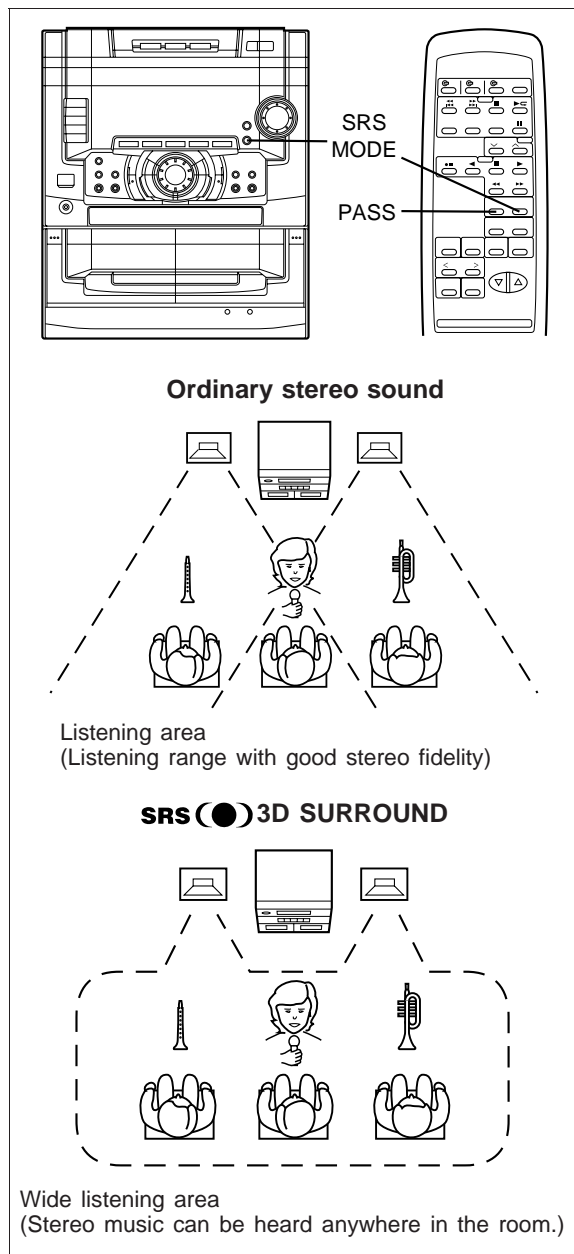


Figure 15-4

(Continued)



■ SRS(●)3D SURROUND

About SRS(●)3D surround:

SRS is a breakthrough technology that creates 3-dimensional sound by processing sound signals based on the human auditory system. It produces real depth and localization of the sound image which cannot be accomplished by ordinary stereo.

SRS only requires two speakers.

SRS(●)3D surround effects:

- Live performance atmosphere
(Simulates a live concert atmosphere)
- The localization of various musical sources is quite clear.
(The positions of the musical instruments and singers are very clear.)
- Reproduction of depth
(Sounds from the front and back of an orchestra can be identified easily.)
- Expansion of the sound field
(The sound image is spread out over a wide area.)

Selecting the 3D surround mode:

When the sound source is in stereo, you can select from any of 5 different 3D surround effect.

- 1 Select any desired audio source and begin playback.
- 2 To hear the 3D surround effect, press the SRS MODE button.
 - "SRS (●)" will appear.

When the SRS MODE button is pressed, the current mode setting will be displayed. To change to a different mode, press the SRS MODE button repeatedly.

- "PASS" will not be displayed in remote control operation.

MODE-1 → MODE-2 → MODE-3 → MODE-4 → MODE-5 → PASS

Notes:

- The 3D SURROUND effect will not work on a monaural sound source.
- When the 3D surround mode is being used, the equalizer will be set to FLAT.

To cancel the 3D surround effect:

(Main unit operation)

Press the SRS MODE button repeatedly to select "PASS".

(Remote control operation)



Press the PASS button.

SURROUND MODE	Effect from each mode
MODE-1	You will enjoy a sound image that produces an intimate sound field. (as in a medium-size hall)
MODE-2	This setting gives you a maximum sound field as music comes out beyond the speakers. (as in a large, domed arena)
MODE-3	This setting is great for live recording and vocal music.
MODE-4	You will hear more vocals in an intimate sound field. (as at a live music performance)
MODE-5	This setting greatly increases the amount of vocals or centre sounds in a recording. (as in a small club)

NOTES ON SCHEMATIC DIAGRAM

- Resistor:
To differentiate the units of resistors, such symbol as K and M are used: the symbol K means 1000 ohm and the symbol M means 1000 kohm and the resistor without any symbol is ohm-type resistor. Besides, the one with "Fusible" is a fuse type.
- Capacitor:
To indicate the unit of capacitor, a symbol P is used: this symbol P means micro-micro-farad and the unit of the capacitor without such a symbol is microfarad. As to electrolytic capacitor, the expression "capacitance/withstand voltage" is used.
(CH), (TH), (RH), (UJ): Temperature compensation
(ML): Mylar type
(P.P.): Polypropylene type
- Schematic diagram and Wiring Side of P.W.Board for this model are subject to change for improvement without prior notice.

REF. NO	DESCRIPTION	POSITION
SW1	OPEN/CLOSE	ON—OFF
SW2	MECHA UP	ON—OFF
SW3	DISC NUMBER	ON—OFF
SW4	PICKUP IN	ON—OFF
SW991	VOLTAGE SELECTOR	230-240V
SWD1	VOLUME JOG	ON—OFF
SWD2	JOG	ON—OFF
SWD3	X-BASS	ON—OFF
SWD7	SOFT	ON—OFF
SWD8	VOCAL	ON—OFF
SWD9	HAVY-2	ON—OFF
SWD10	HAVY-1	ON—OFF
SWD11	FLAT	ON—OFF
SWD12	TUNING UP/CUE	ON—OFF
SWD13	STOP	ON—OFF
SWD14	NORMAL EDIT	ON—OFF
SWD15	HIGH EDIT	ON—OFF
SWD16	REC/PAUSE	ON—OFF
SWD17	F-PLAY	ON—OFF
SWD18	SRS/DEMO	ON—OFF
SWD21	BAL RIGHT	ON—OFF
SWD22	BAL LEFT	ON—OFF
SWD30	TUNING DOWN/REWIND	ON—OFF
SWD31	CD PAUSE	ON—OFF

- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
 1. In the tuner section,
() indicates AM
< > indicates FM stereo
 2. In the main section, a tape is being played back.
 3. In the deck section, a tape is being played back.
() indicates the record state.
 4. In the power section, a tape is being played back.
 5. In the CD section, the CD is stopped.
- Parts marked with "△" () () are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

REF. NO	DESCRIPTION	POSITION
SWD32	REVERSE MODE	ON—OFF
SWD33	R-PLAY	ON—OFF
SWD34	CLOCK	ON—OFF
SWD35	MEMORY	ON—OFF
SWD36	TIMER	ON—OFF
SWD37	SLEEP	ON—OFF
SWD38	CLEAR	ON—OFF
SWD39	VIDEO/AUX 1	ON—OFF
SWD40	VIDEO/AUX 2	ON—OFF
SWD41	TAPE 1/2	ON—OFF
SWD42	TUNER/BAND	ON—OFF
SWD43	CD	ON—OFF
SWD48	POWER	ON—OFF
SWD49	KARAOKE (CD-K449W Only)	ON—OFF
SWD50	DISC 1	ON—OFF
SWD51	DISC 2	ON—OFF
SWD52	DISC 3	ON—OFF
SWD53	DISC SKIP	ON—OFF
SWD54	OPEN/CLOS	ON—OFF
SWF2	SPAN SELECTOR	50/9
SWM3	REC FWD	ON—OFF
SWM4	REC RVS	ON—OFF
SWM5	F.A.S	ON—OFF
SWM6	CAM	ON—OFF

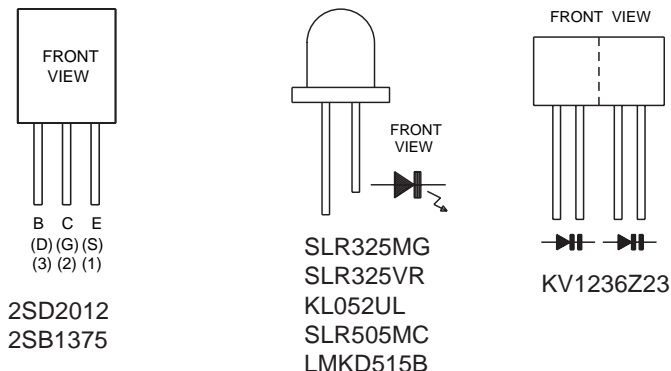
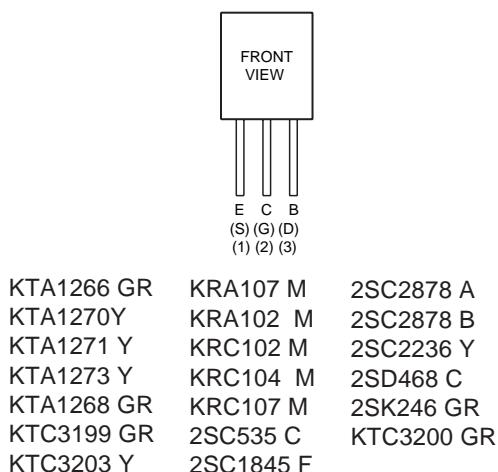




Figure 17 TYPES OF TRANSISTOR AND LED

NOTES ON SCHEMATIC DIAGRAM

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SW3	DISC NUMBER	ON—OFF
SW4	PICKUP IN	ON—OFF
SW991	VOLTAGE SELECTOR	230-240V
SWD1	VOLUME JOG	ON—OFF
SWD2	JOG	ON—OFF
SWD3	X-BASS	ON—OFF
SWD7	SOFT	ON—OFF
SWD8	VOCAL	ON—OFF
SWD9	HAVY-2	ON—OFF
SWD10	HAVY-1	ON—OFF
SWD11	FLAT	ON—OFF
SWD12	TUNING UP/CUE	ON—OFF
SWD13	STOP	ON—OFF
SWD14	NORMAL EDIT	ON—OFF
SWD15	HIGH EDIT	ON—OFF
SWD16	REC/PAUSE	ON—OFF
SWD17	F-PLAY	ON—OFF
SWD18	SRS/DEMO	ON—OFF
SWD21	BAL RIGHT	ON—OFF
SWD22	BAL LEFT	ON—OFF
SWD30	TUNING DOWN/REWIND	ON—OFF
SWD31	CD PAUSE	ON—OFF

- The indicated voltage in each section is the one measured by Digital Multimeter between such a section and the chassis with no signal given.
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SWD33	R-PLAY	ON—OFF
SWD34	CLOCK	ON—OFF
SWD35	MEMORY	ON—OFF
SWD36	TIMER	ON—OFF
SWD37	SLEEP	ON—OFF
SWD38	CLEAR	ON—OFF
SWD39	VIDEO/AUX 1	ON—OFF
SWD40	VIDEO/AUX 2	ON—OFF
SWD41	TAPE 1/2	ON—OFF
SWD42	TUNER/BAND	ON—OFF
SWD43	CD	ON—OFF
SWD48	POWER	ON—OFF
SWD49	KARAOKE (CD-K449W Only)	ON—OFF
SWD50	DISC 1	ON—OFF
SWD51	DISC 2	ON—OFF
SWD52	DISC 3	ON—OFF
SWD53	DISC SKIP	ON—OFF
SWD54	OPEN/CLOS	ON—OFF
SWF2	SPAN SELECTOR	50/9
SWM3	REC FWD	ON—OFF
SWM4	REC RVS	ON—OFF
SWM5	F.A.S	ON—OFF
SWM6	CAM	ON—OFF

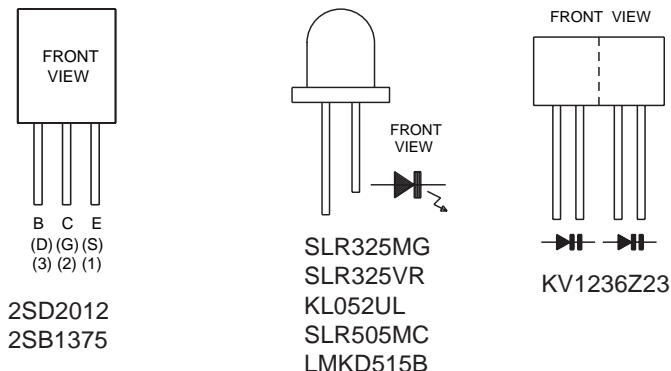
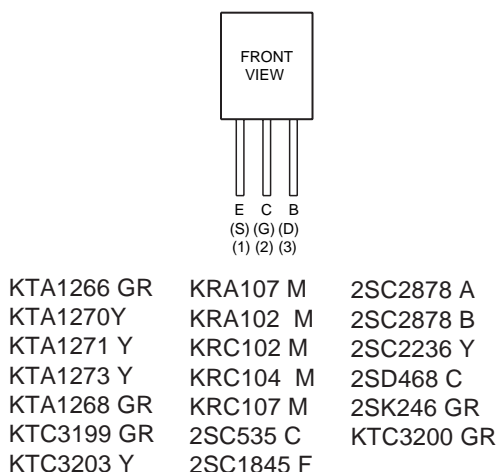
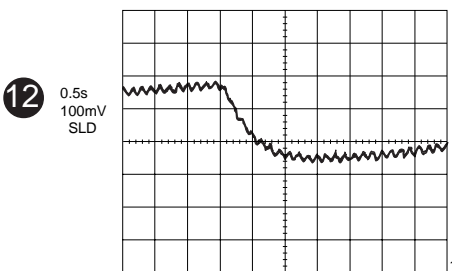
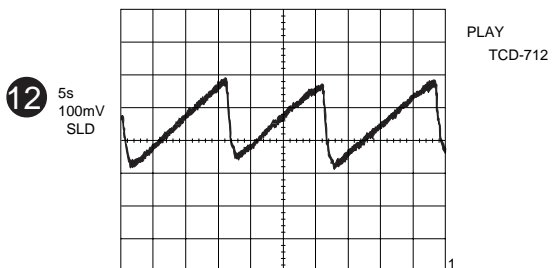
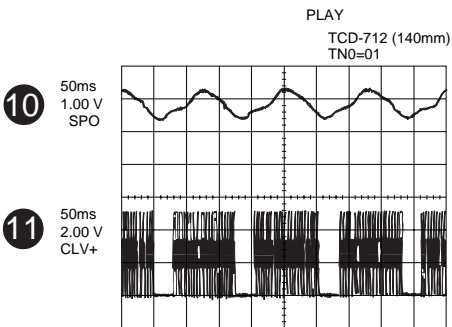
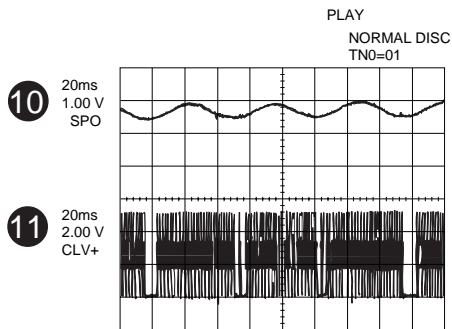
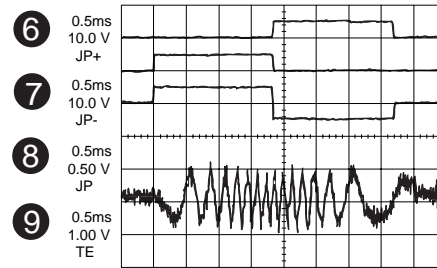
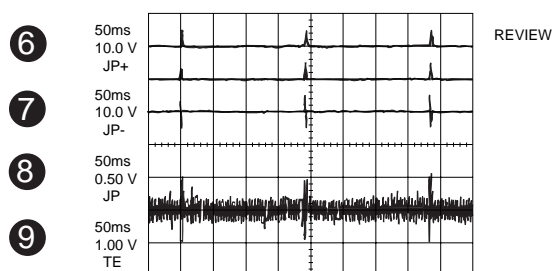
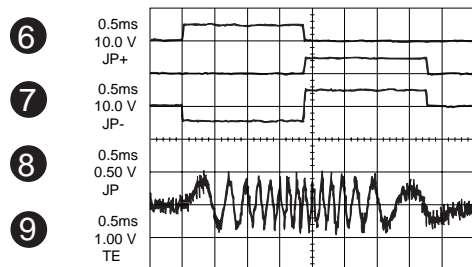
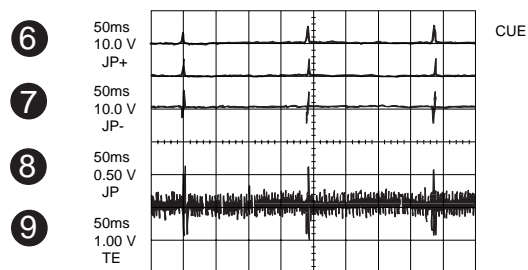
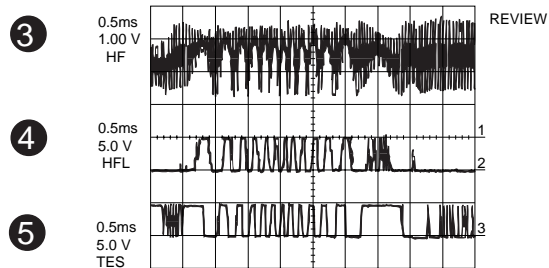
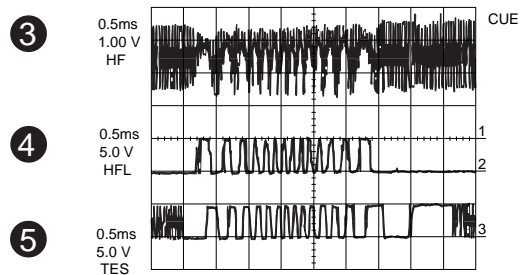
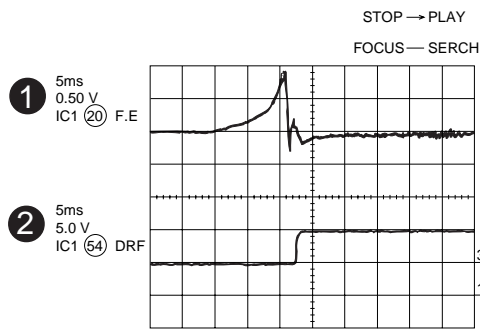


Figure 17 TYPES OF TRANSISTOR AND LED

WAVEFORMS OF CD CIRCUIT



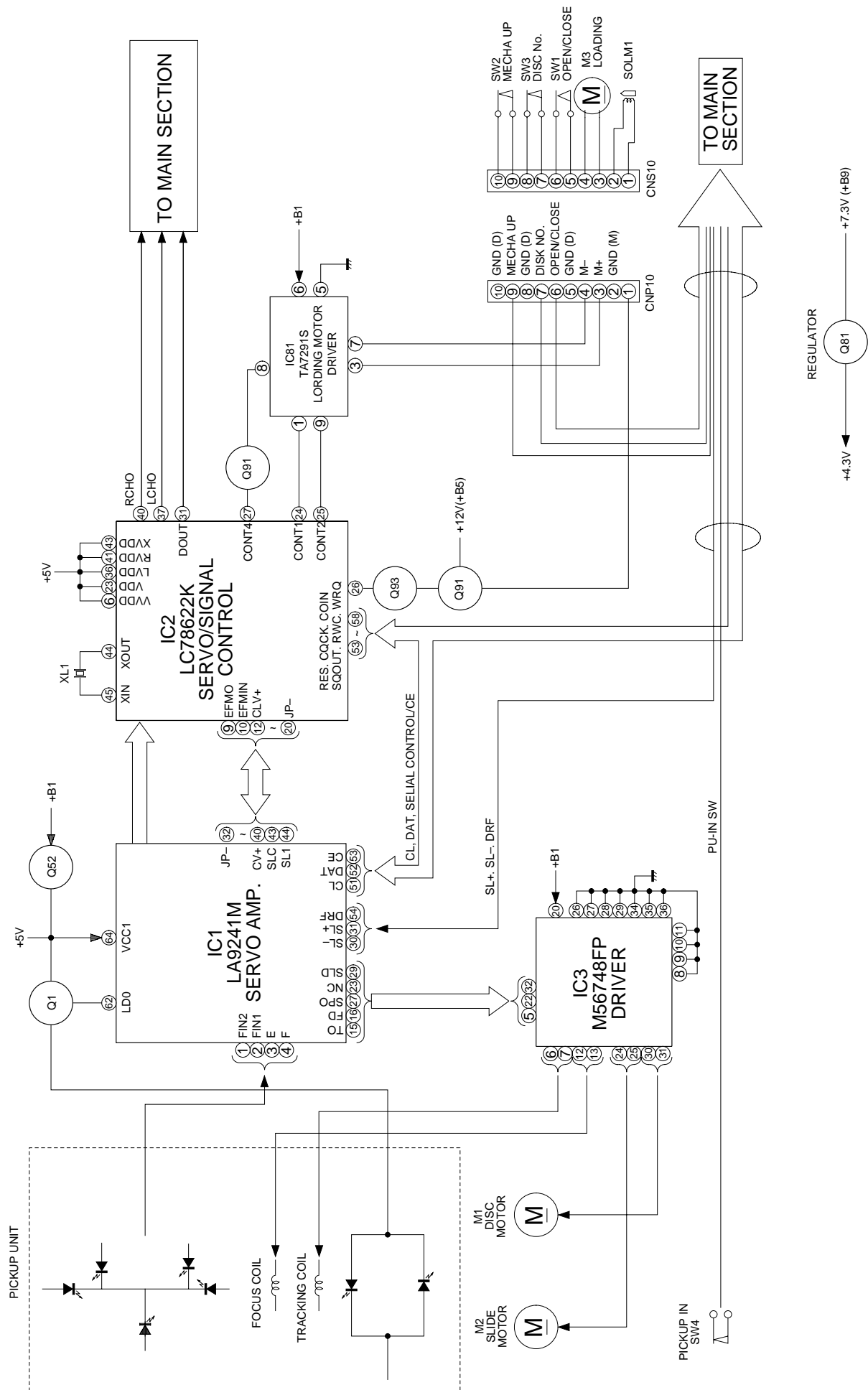
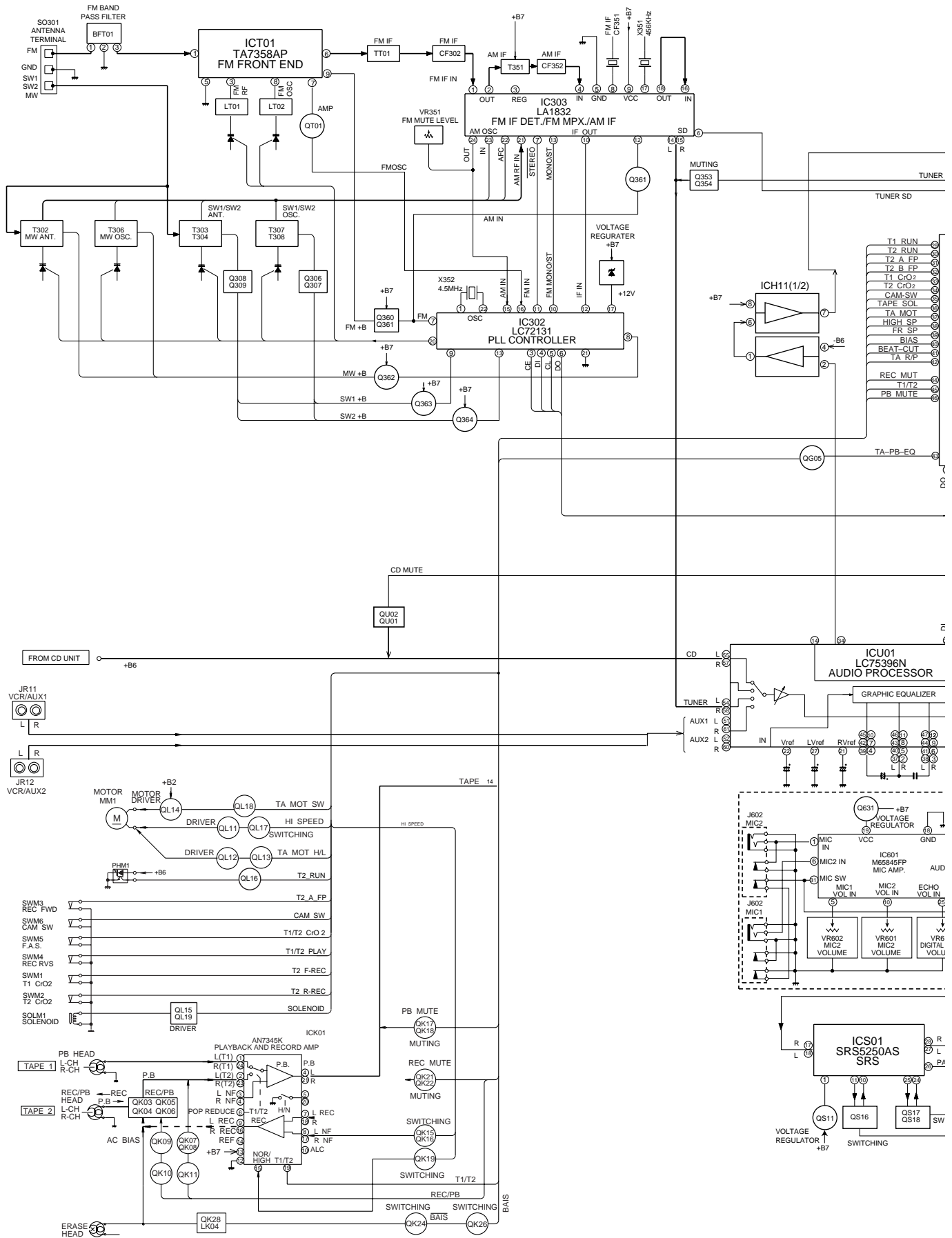


Figure 19 BLOCK DIAGRAM (1/3)

CD-C449W/K449W



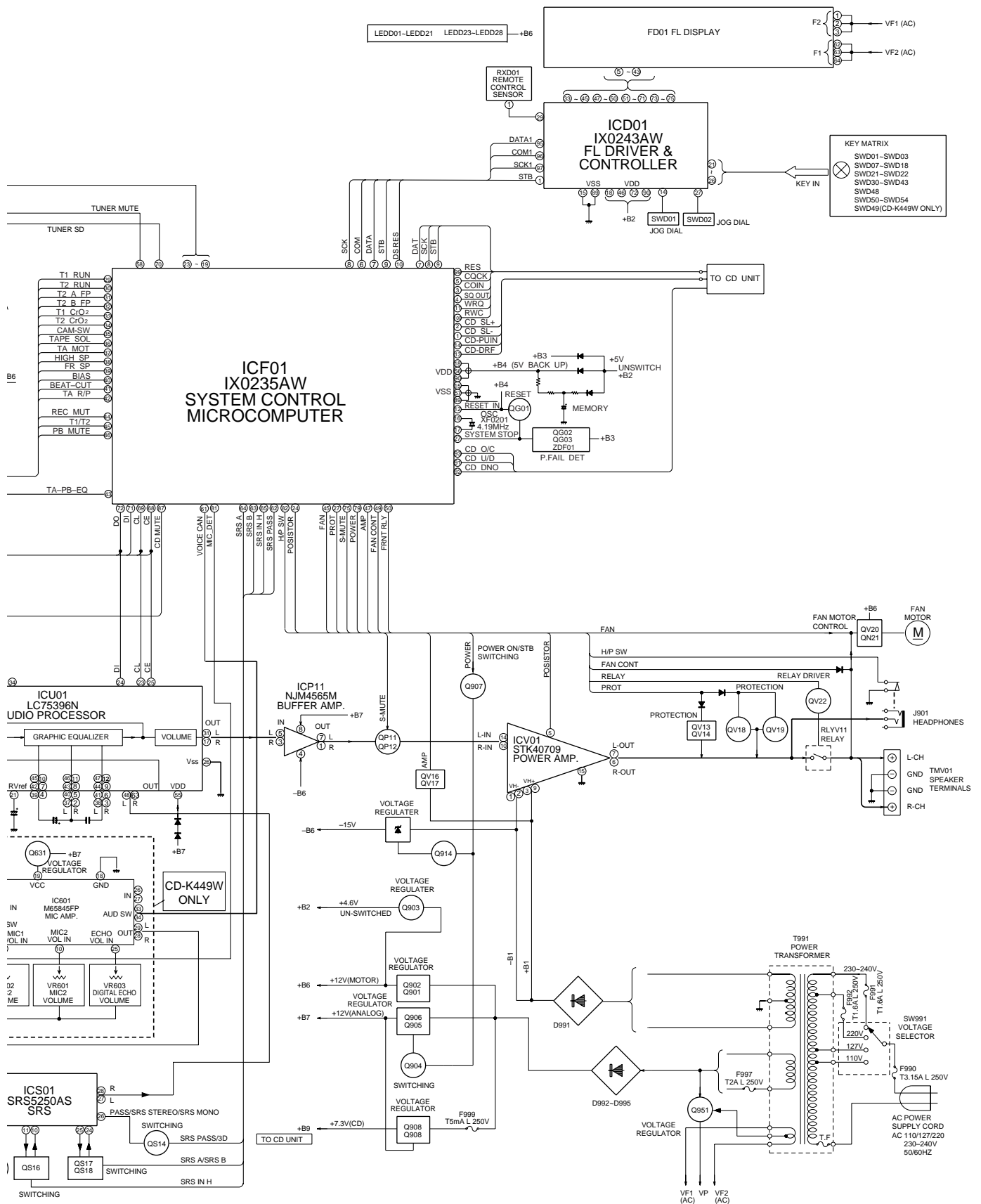


Figure 21 BLOCK DIAGRAM (3/3)

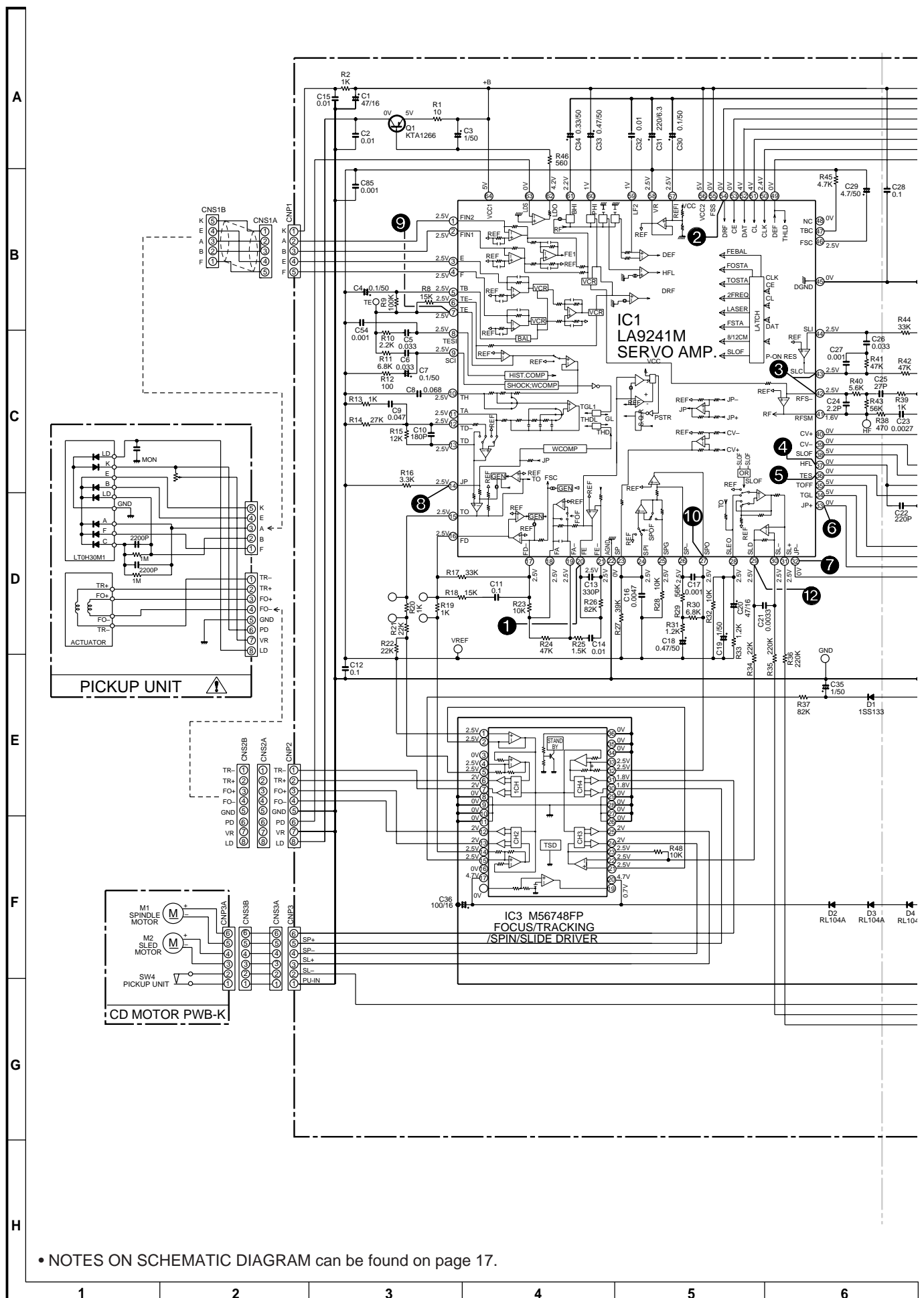
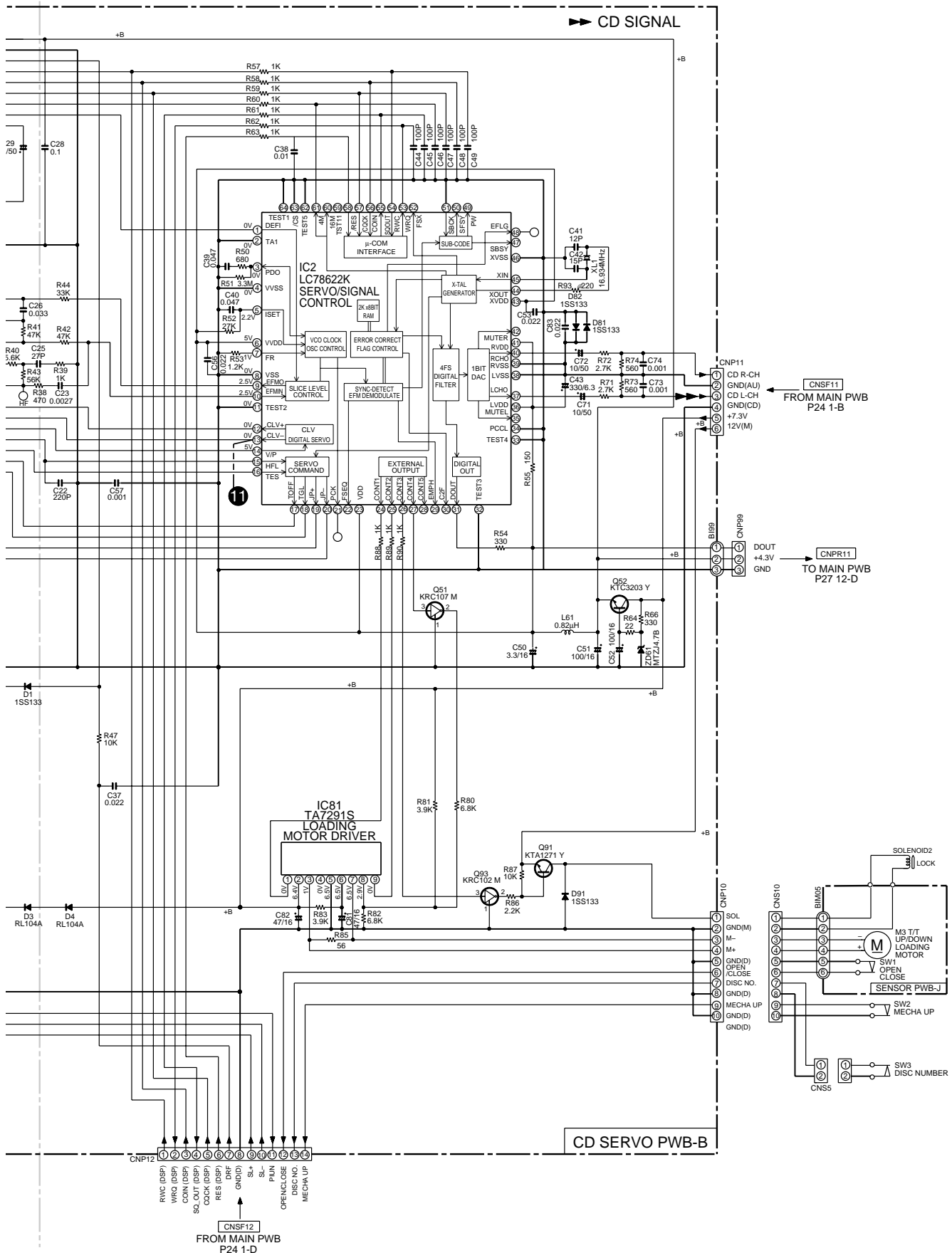


Figure 22 SCHEMATIC DIAGRAM (1/15)



• The numbers 1 to 12 are waveform numbers shown in page 18.

7	8	9	10	11	12
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Figure 23 SCHEMATIC DIAGRAM (2/15)

• NOTES ON SCHEMATIC DIAGRAM can be found on page 17.

- 24 -

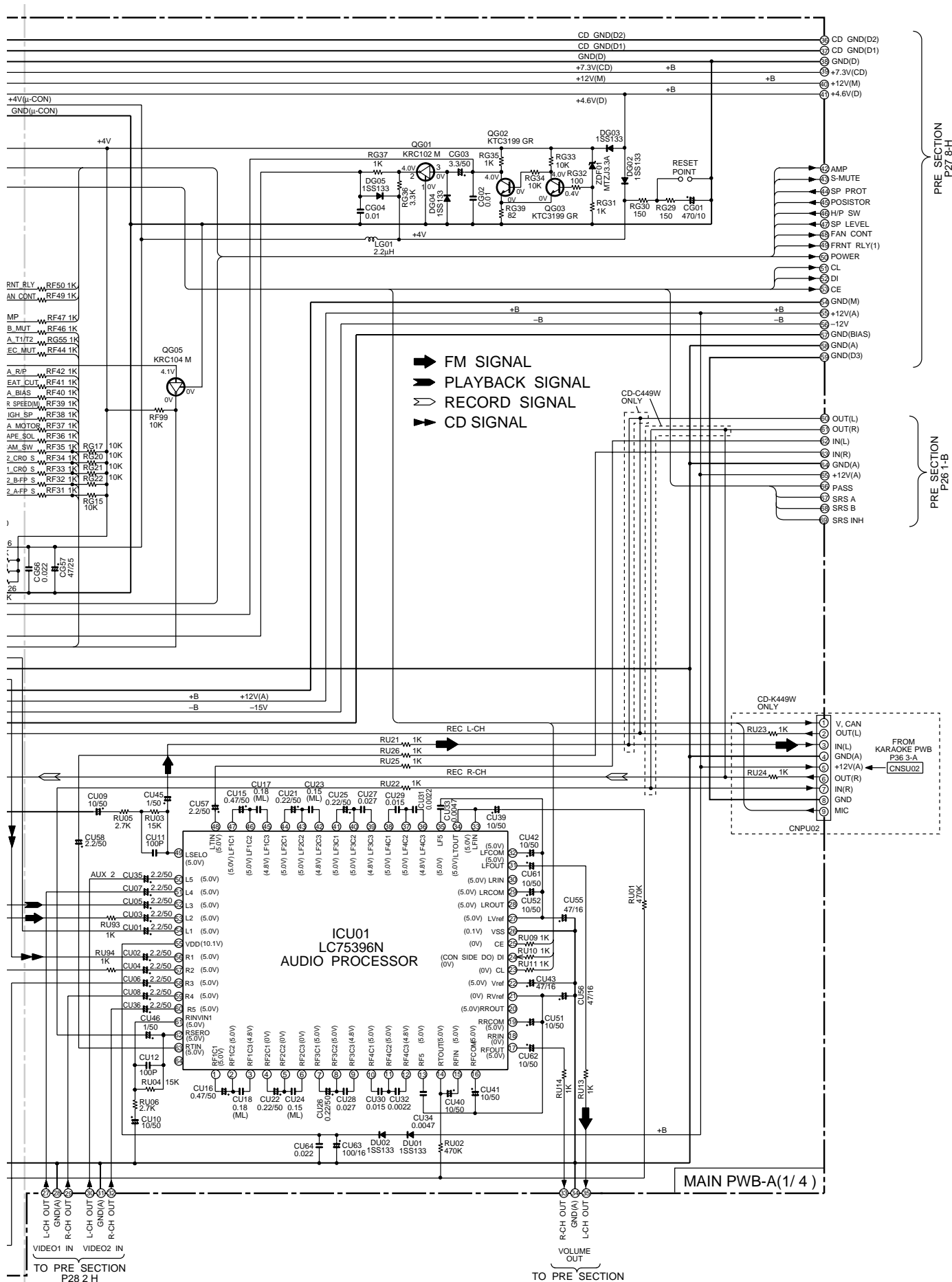


Figure 25 SCHEMATIC DIAGRAM (4/15)



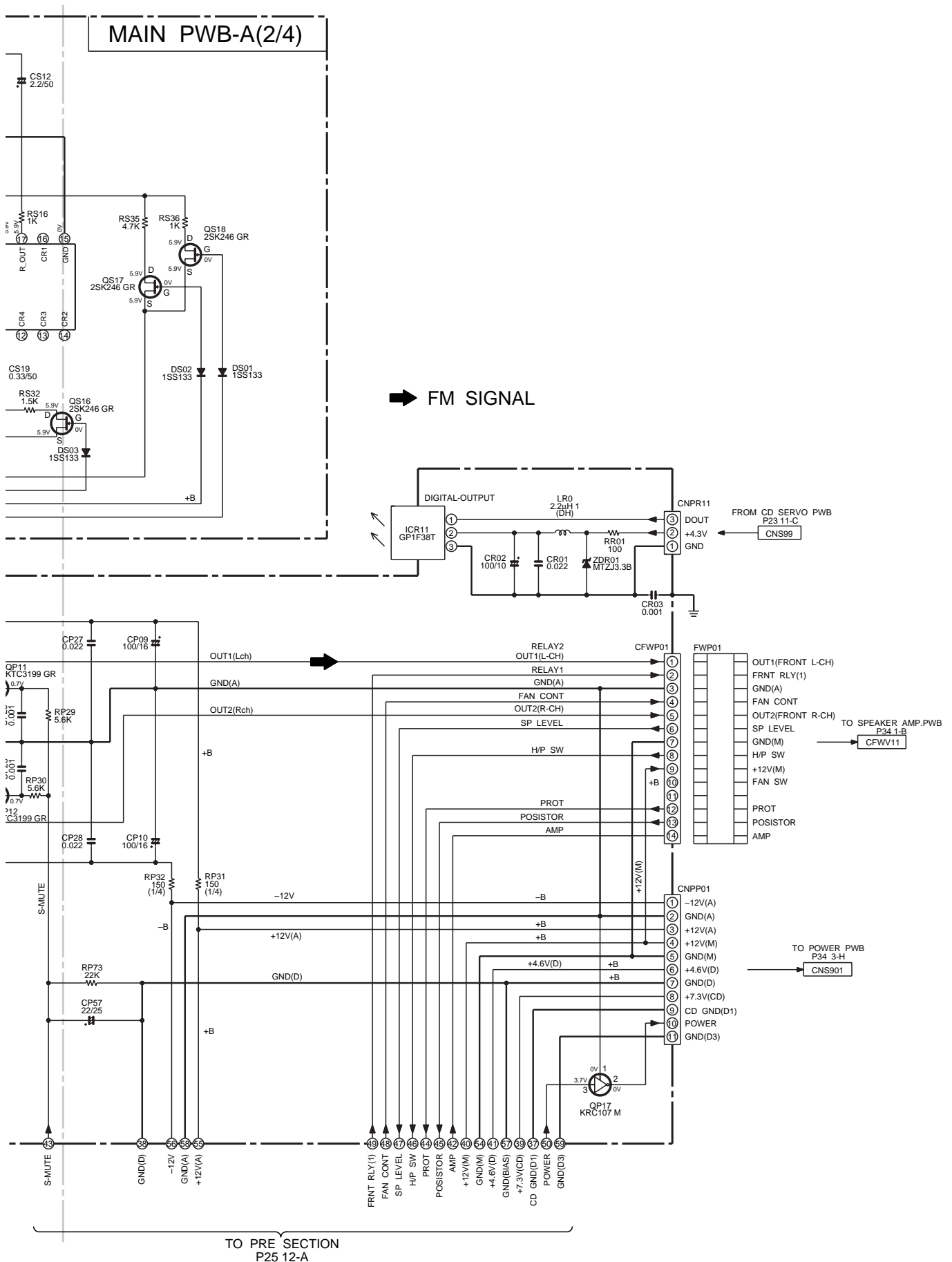


Figure 27 SCHEMATIC DIAGRAM (6/15)

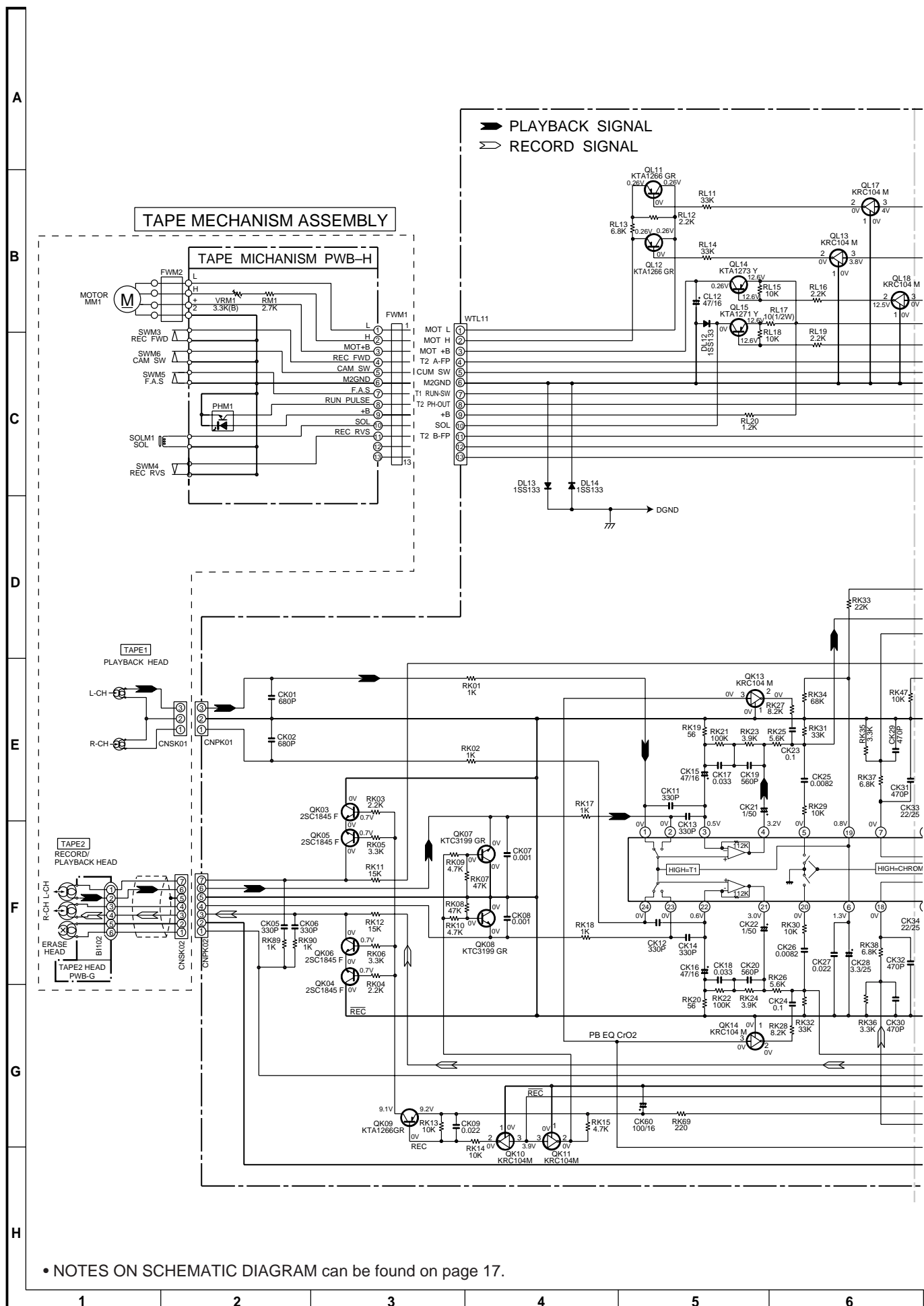


Figure 28 SCHEMATIC DIAGRAM (7/15)

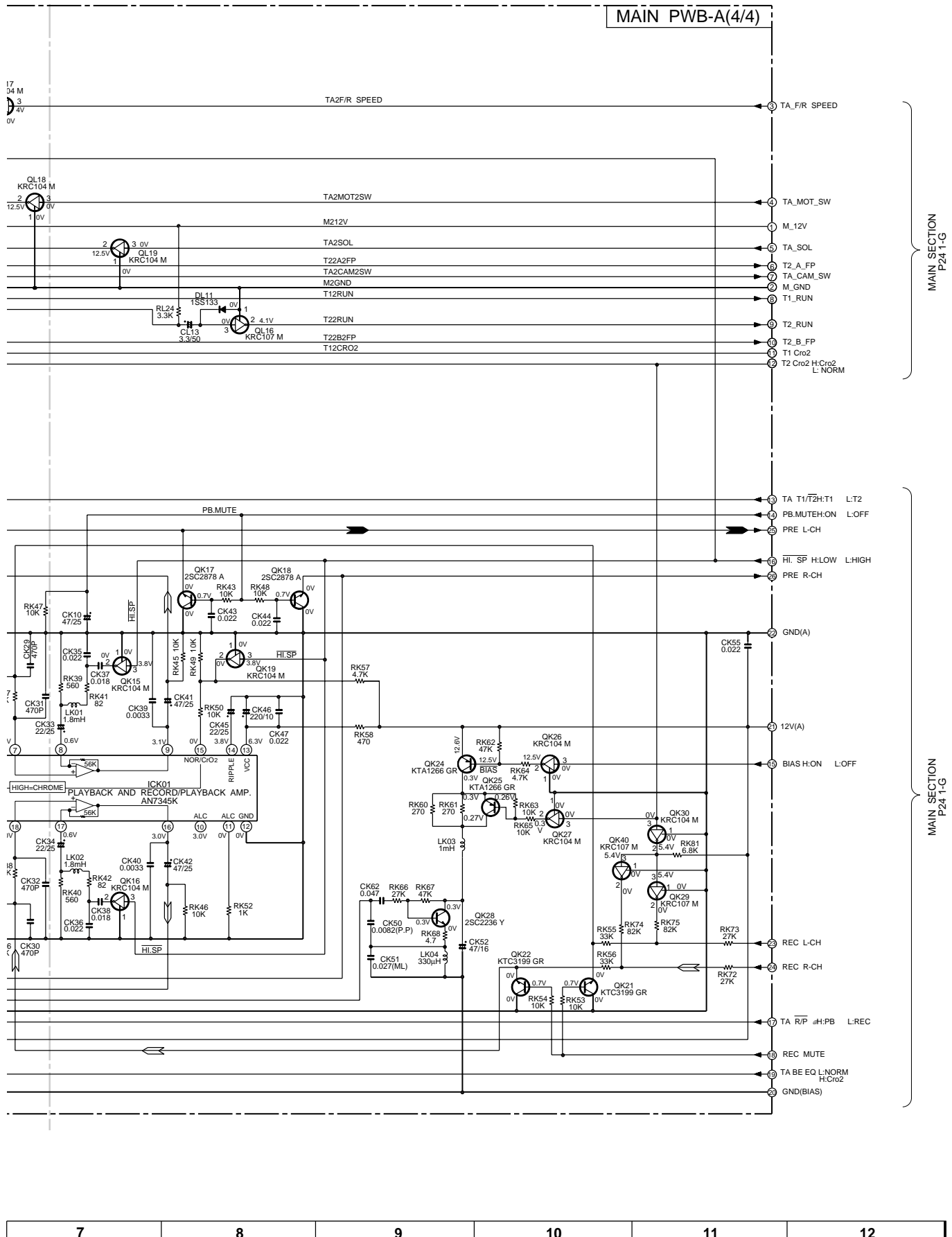


Figure 29 SCHEMATIC DIAGRAM (8/15)

CD-C449W/K449W

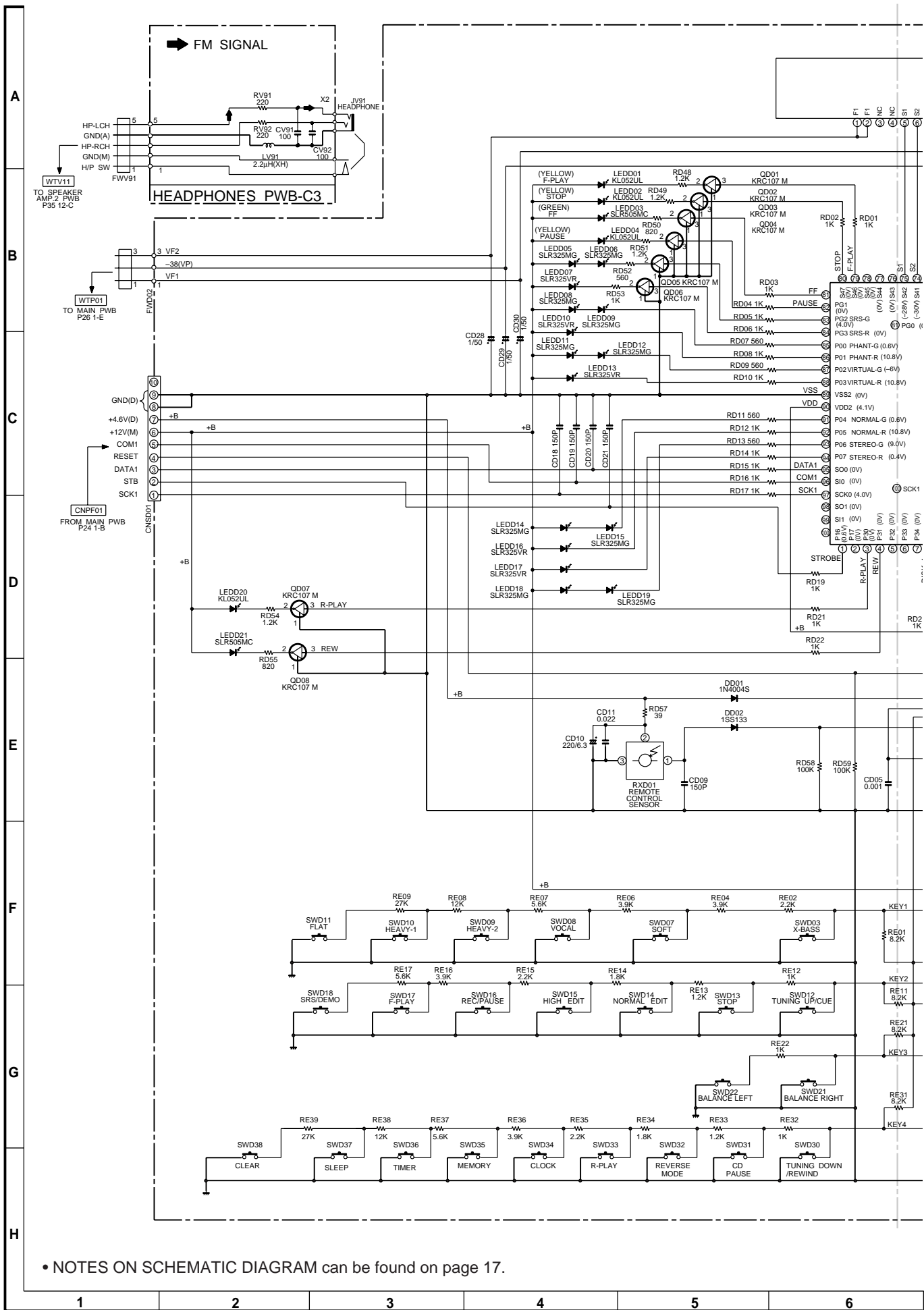
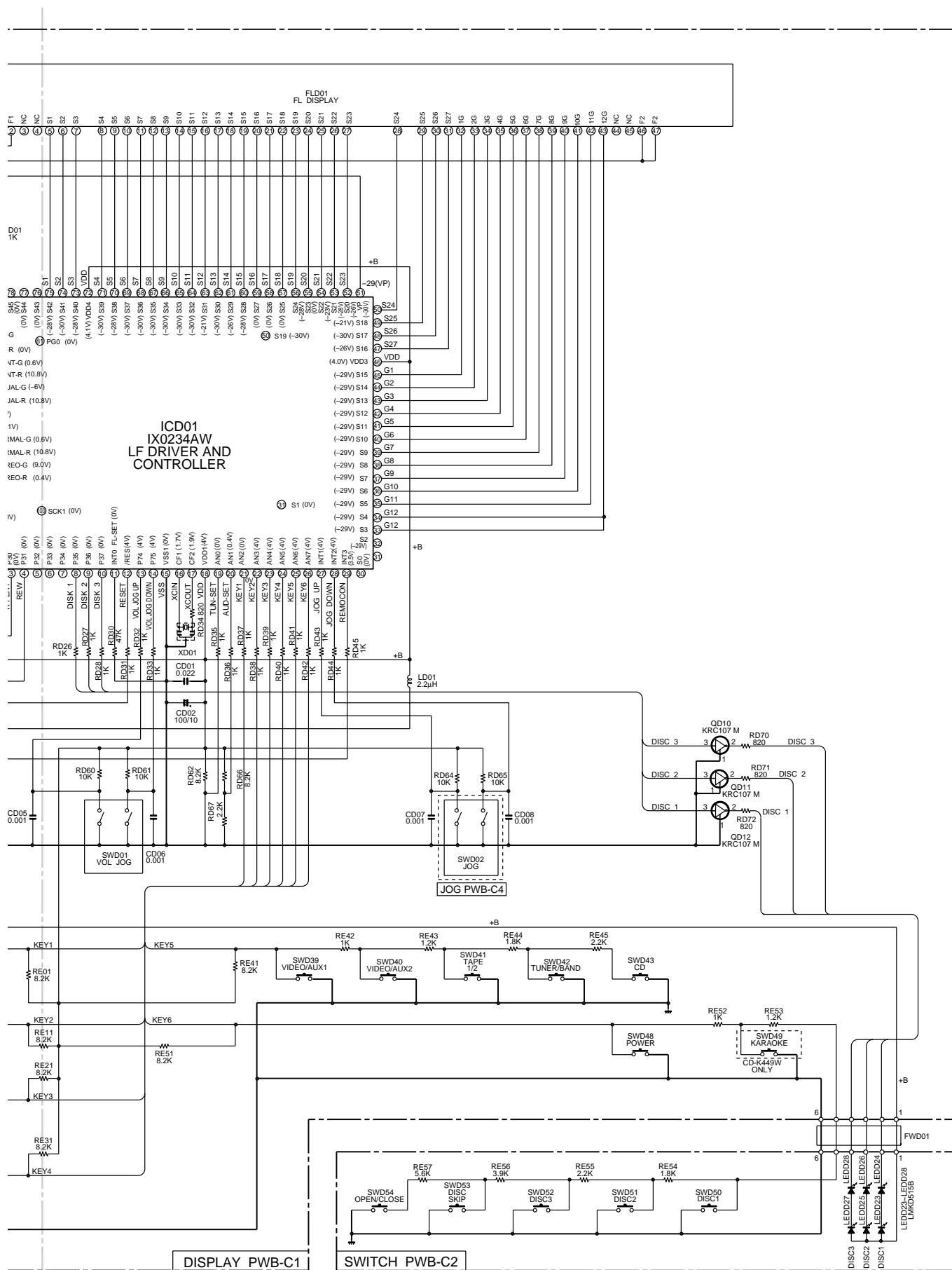


Figure 30 SCHEMATIC DIAGRAM (9/15)



FM SIGNAL

MW/SW1/SW2 SIGNAL

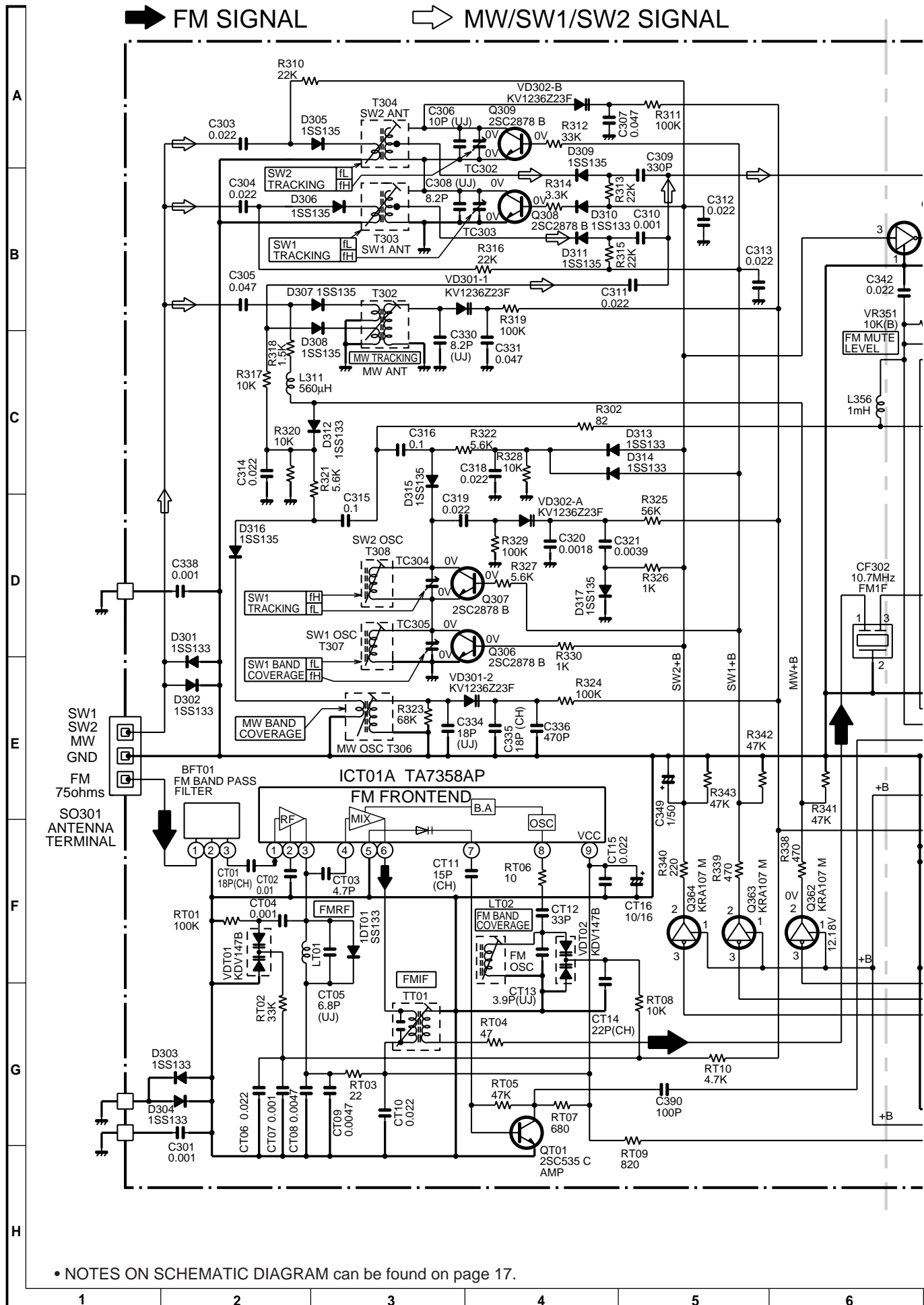


Figure 32 SCHEMATIC DIAGRAM (11/15)

TUNER PWB-E

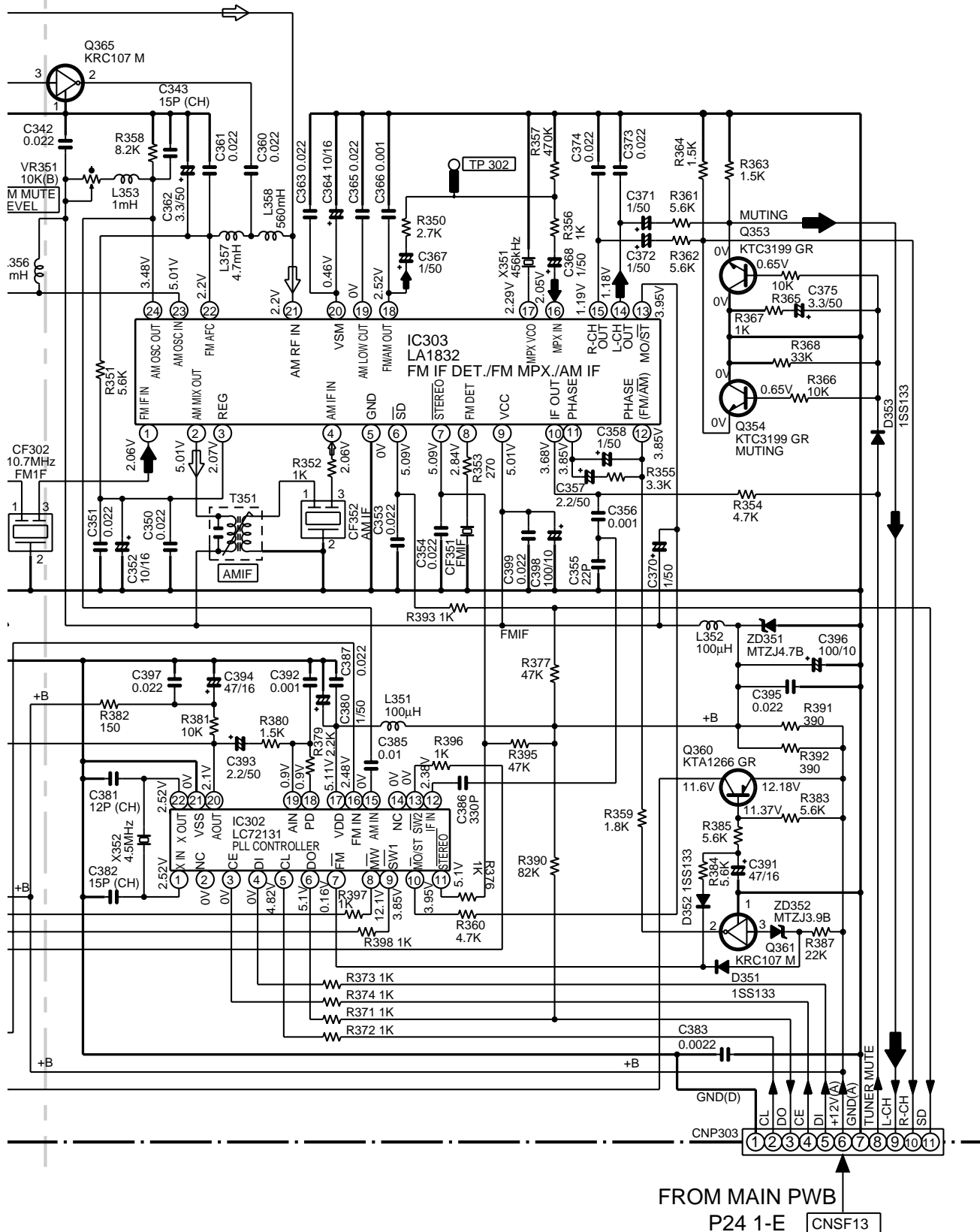


Figure 33 SCHEMATIC DIAGRAM (12/15)

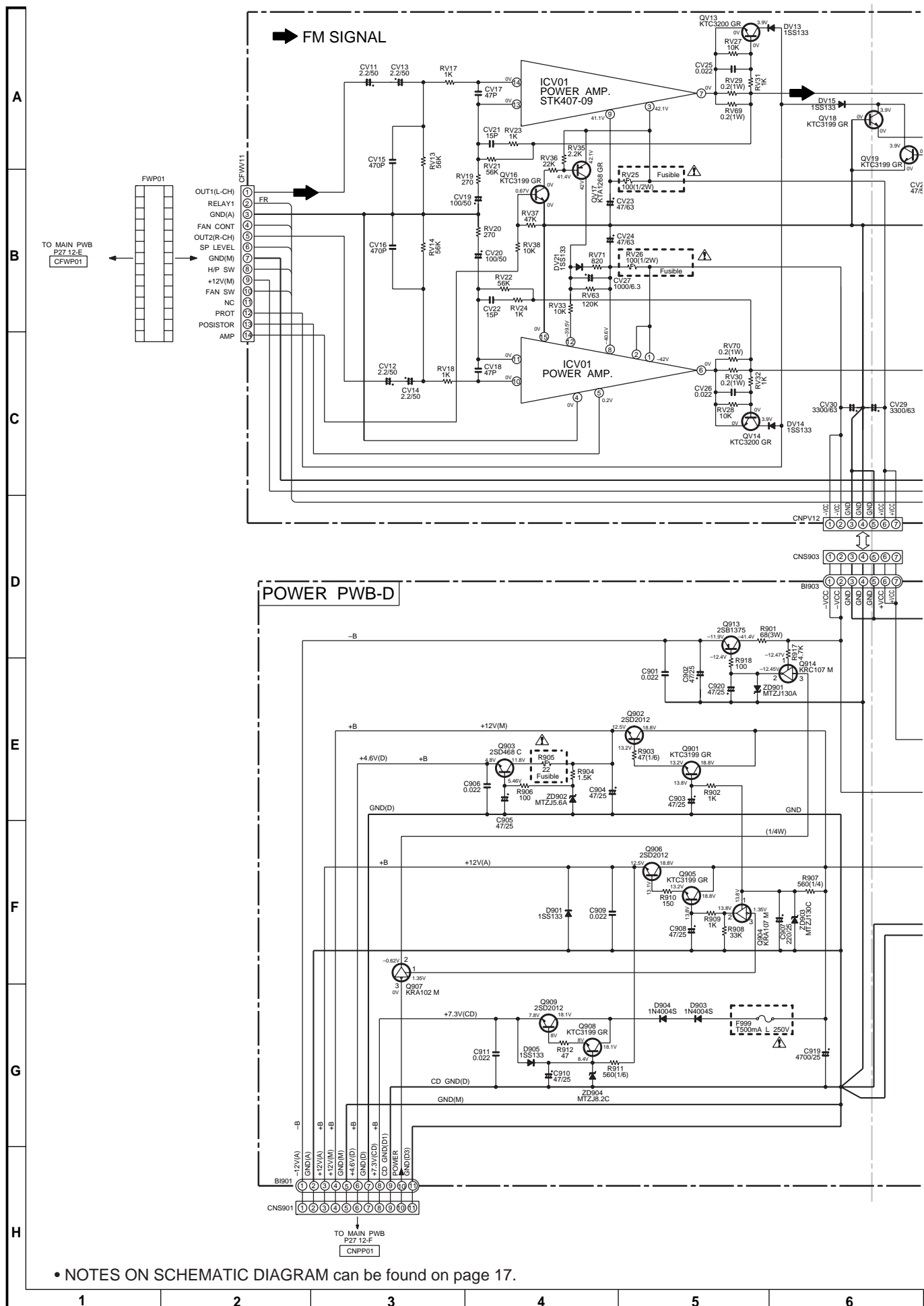


Figure 34 SCHEMATIC DIAGRAM (13/15)

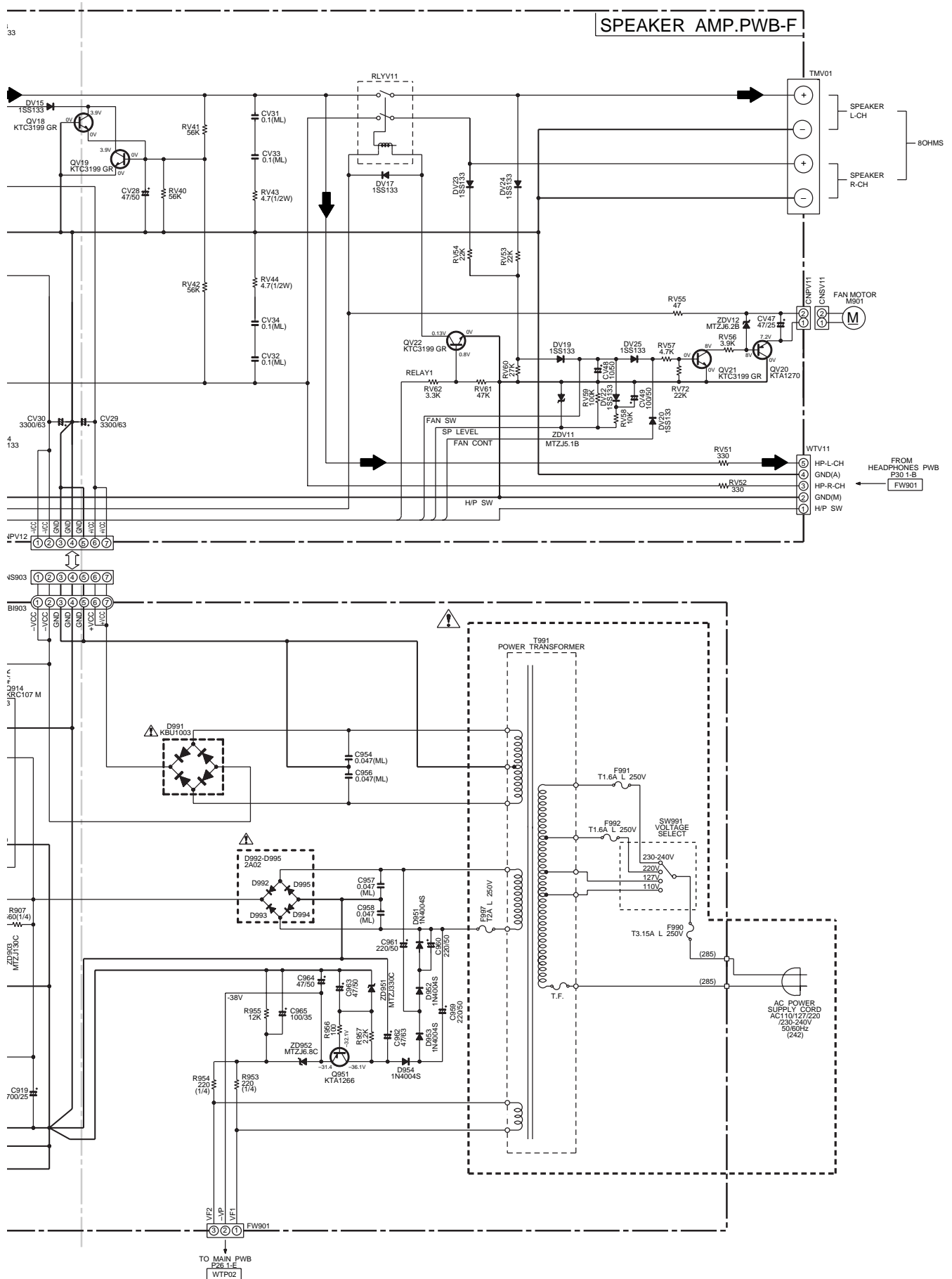
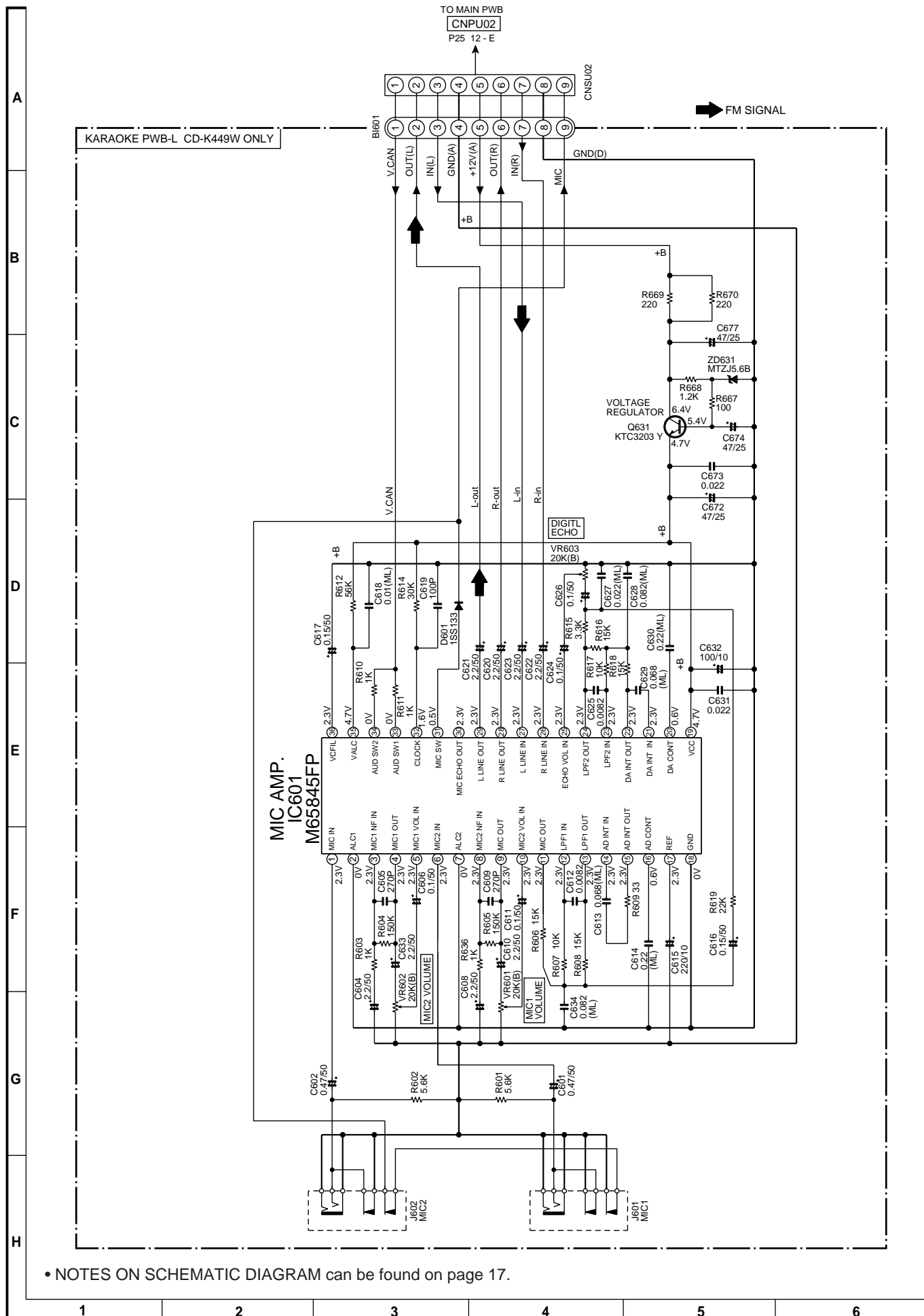
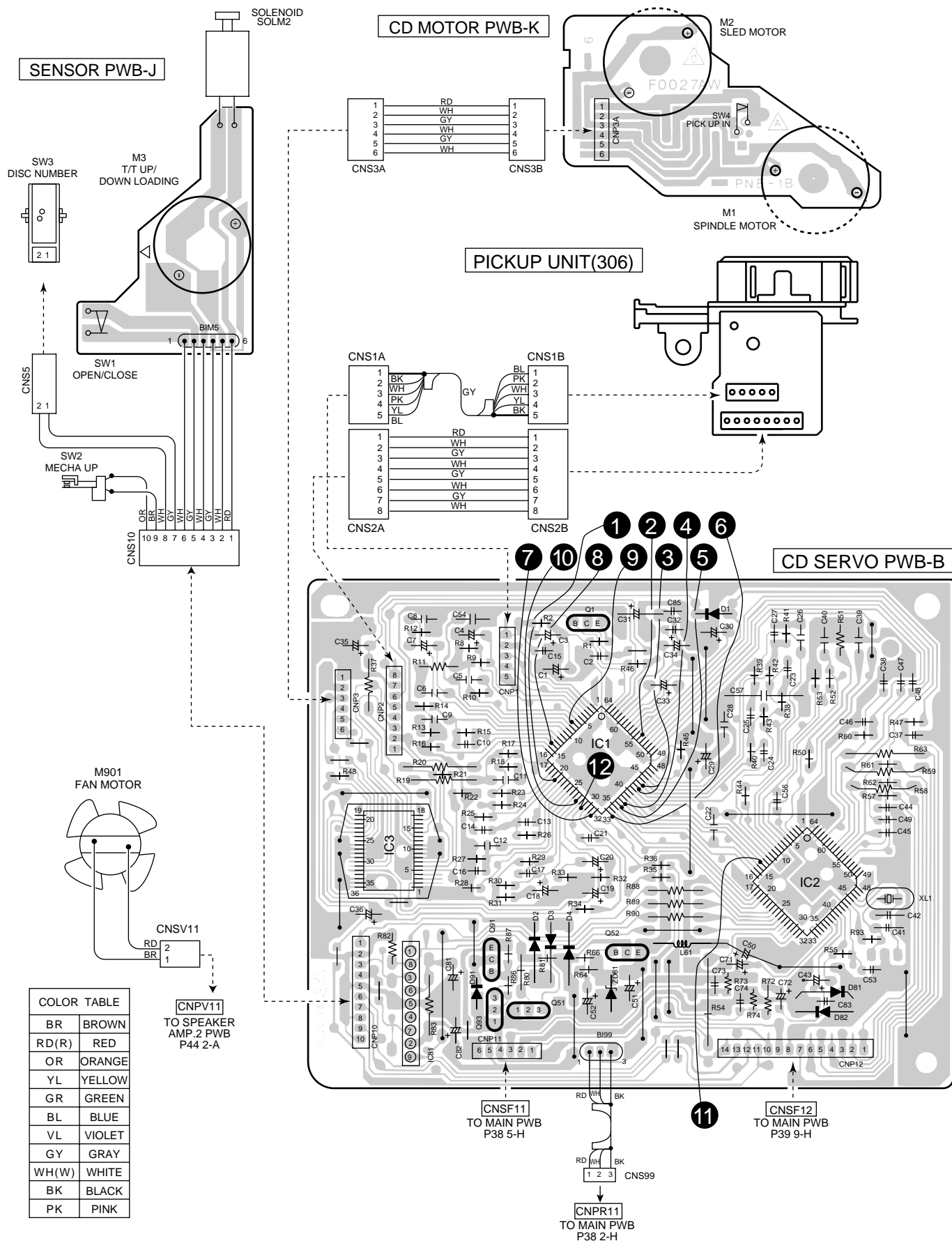


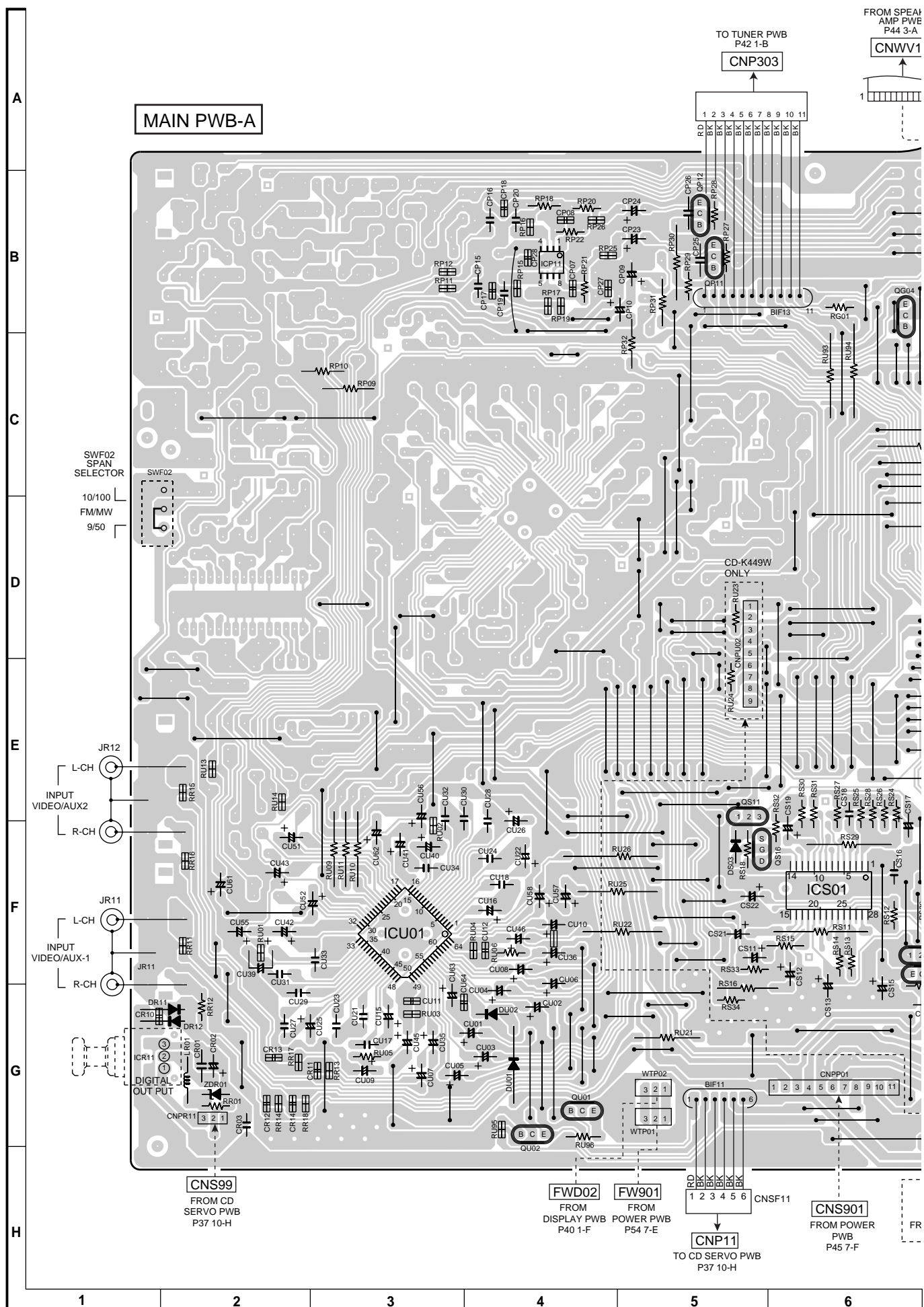
Figure 35 SCHEMATIC DIAGRAM (14/15)

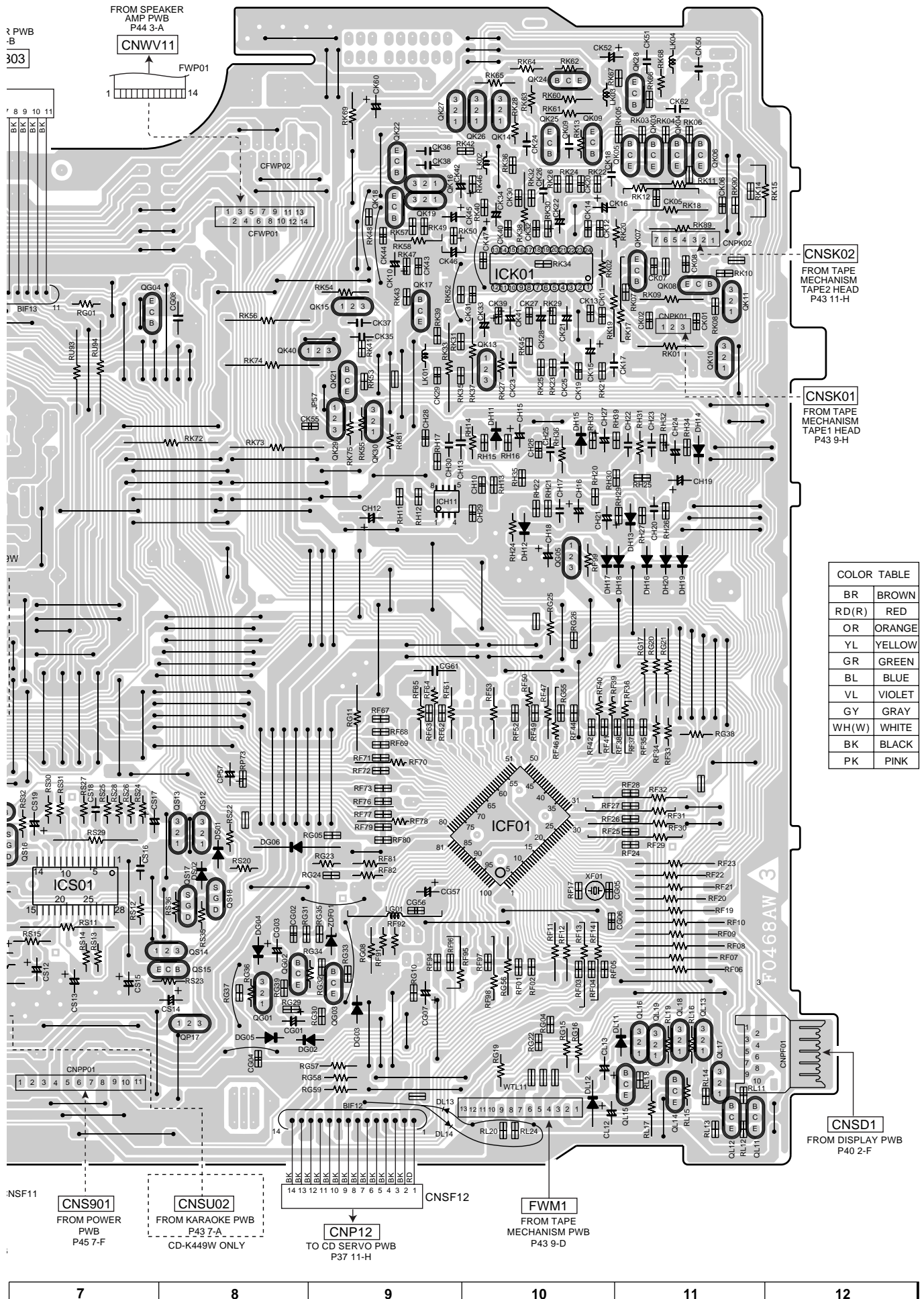


• NOTES ON SCHEMATIC DIAGRAM can be found on page 17.

Figure 36 SCHEMATIC DIAGRAM (15/15)







COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK



- 40 -



- 41 -

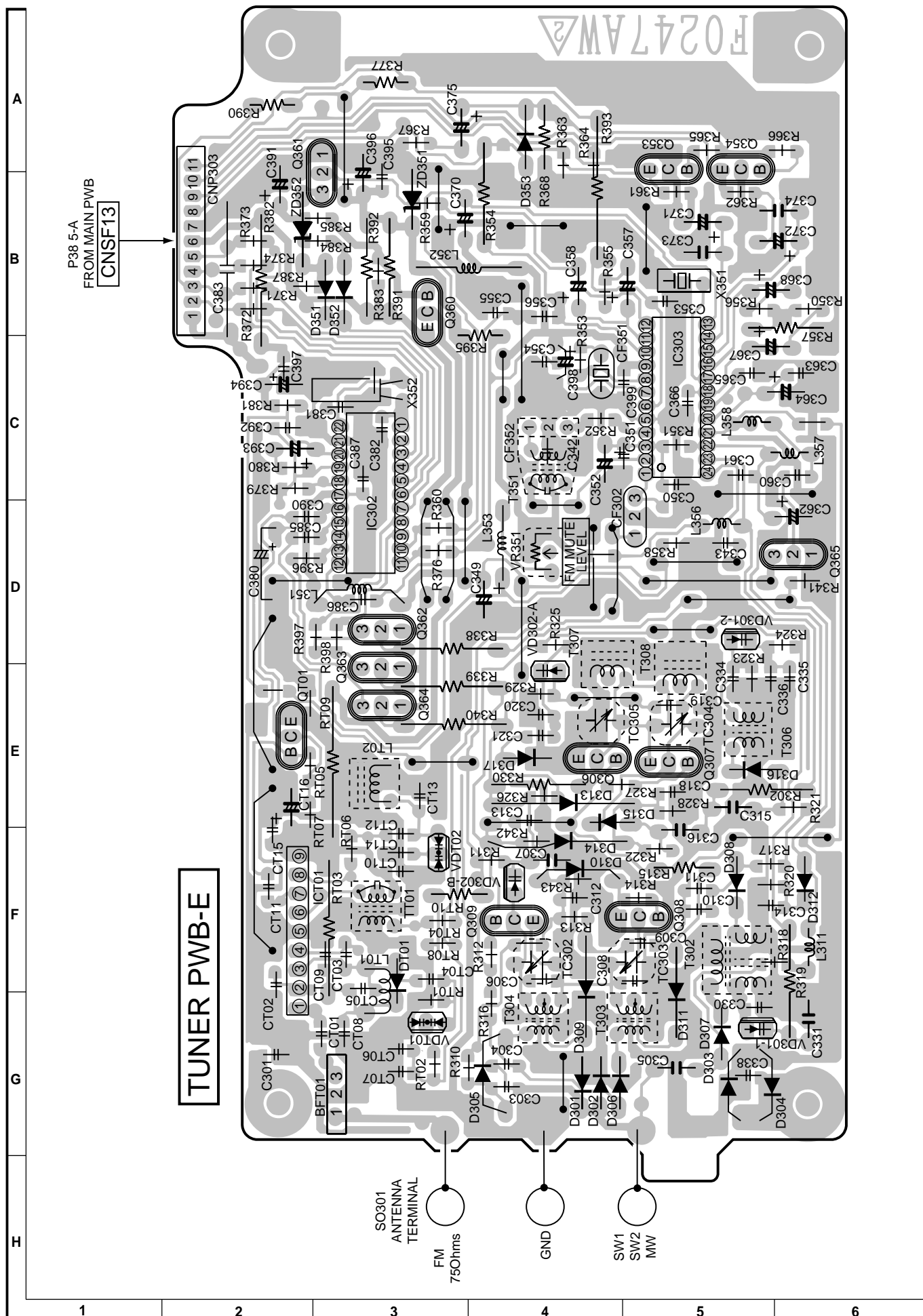
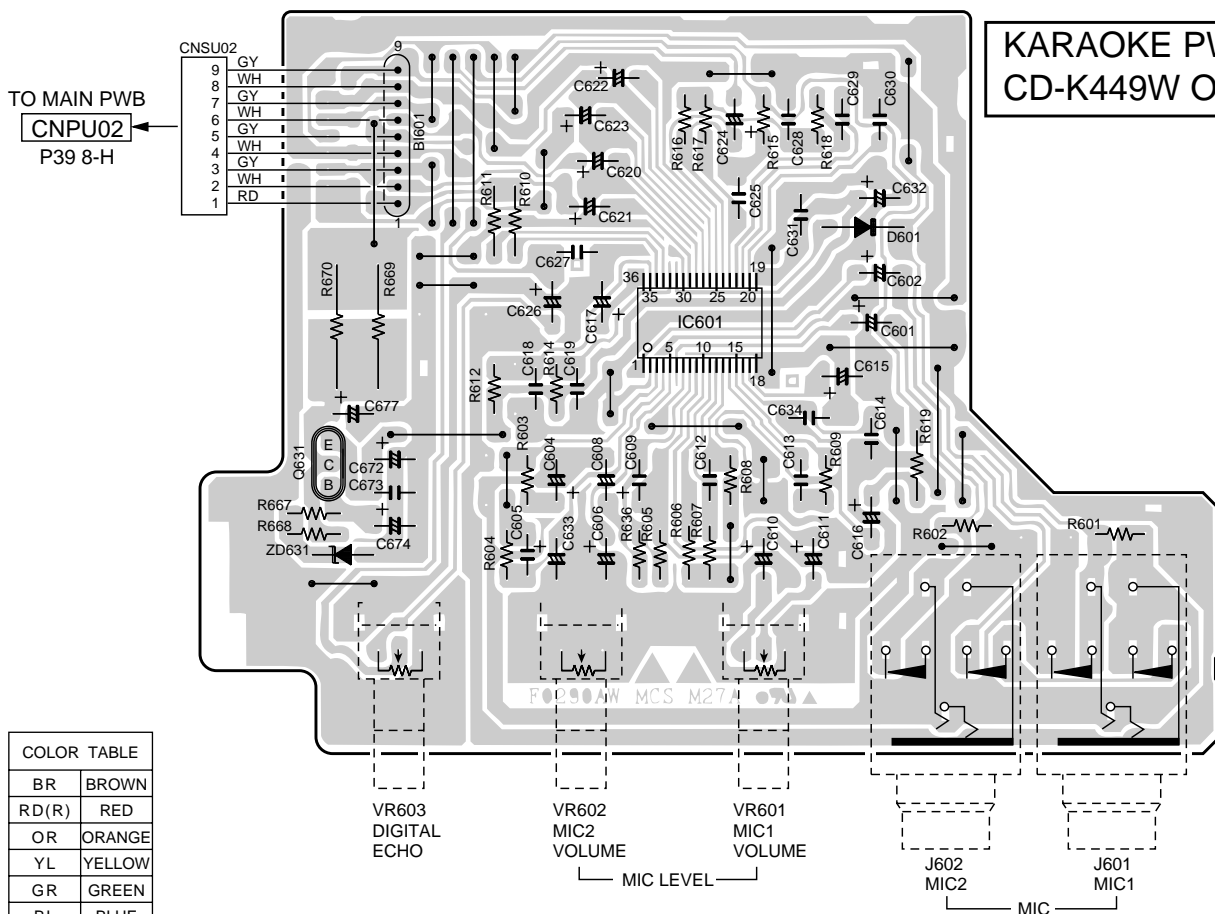
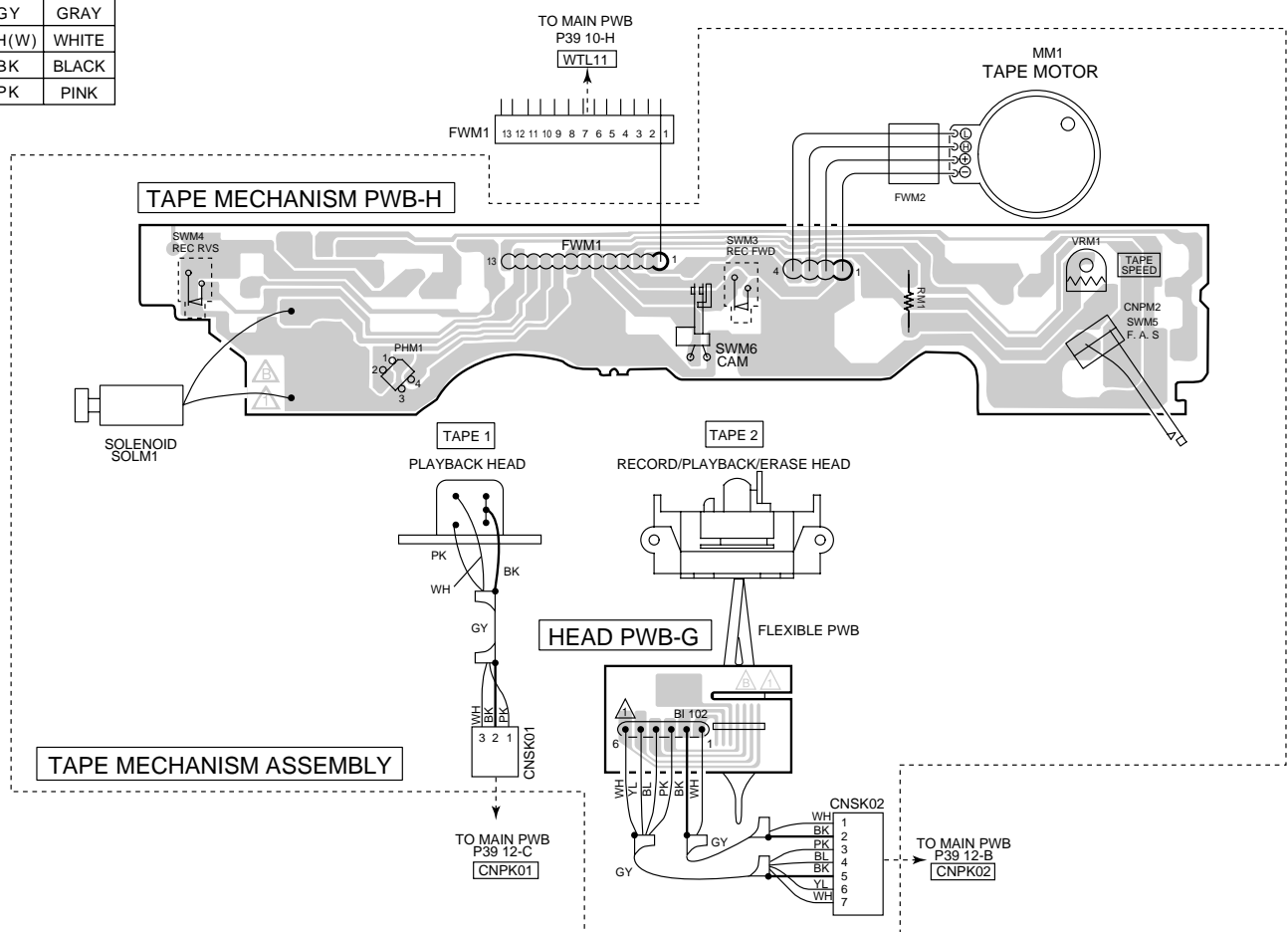


Figure 42 WIRING SIDE OF P.W.BOARD (6/9)

KARAOKE PWB-L CD-K449W ONLY



COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK



7	8	9	10	11	12
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Figure 43 WIRING SIDE OF P.W.BOARD (7/9)

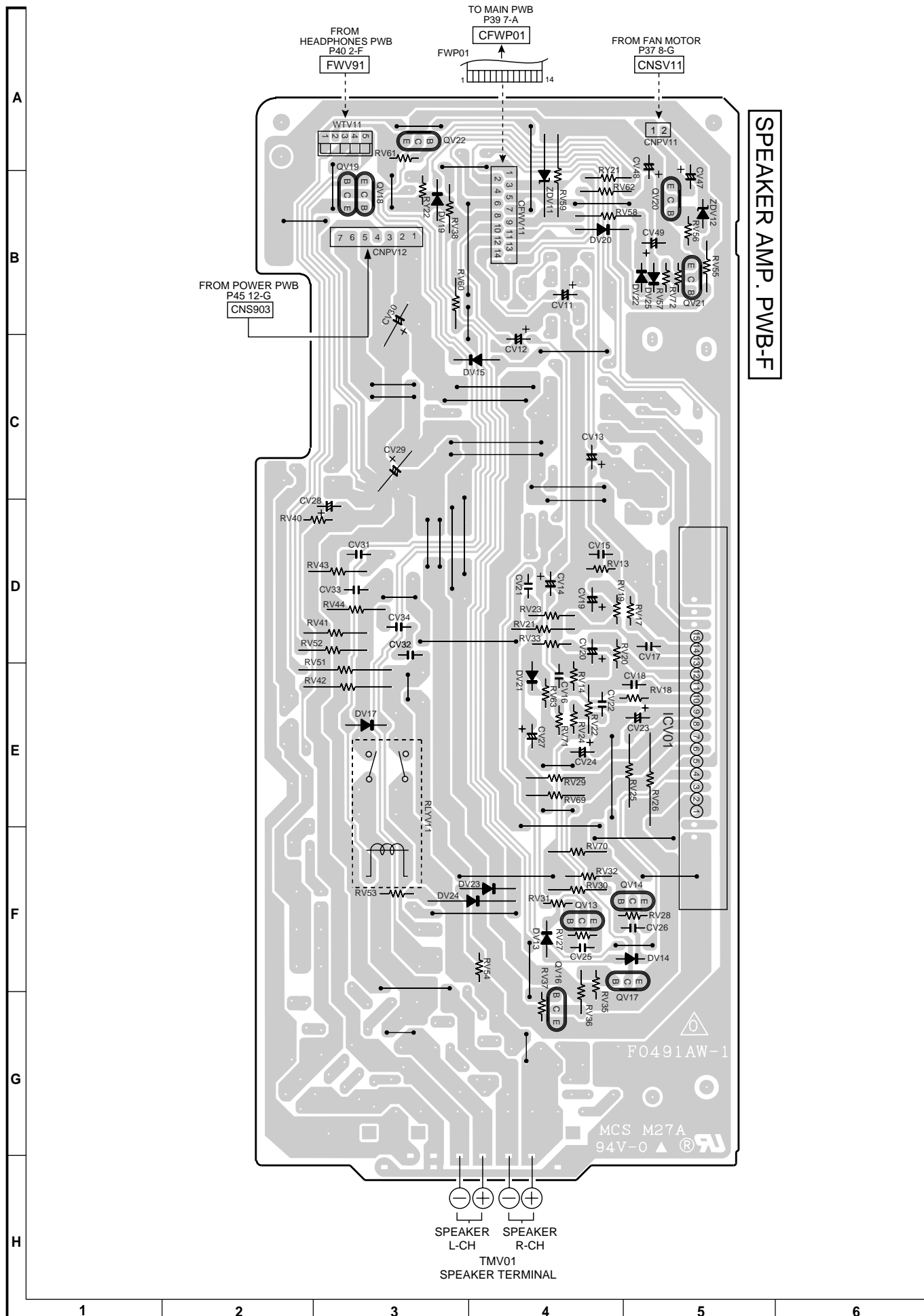


Figure 44 WIRING SIDE OF P.W.BOARD (8/9)

COLOR TABLE	
BR	BROWN
RD(R)	RED
OR	ORANGE
YL	YELLOW
GR	GREEN
BL	BLUE
VL	VIOLET
GY	GRAY
WH(W)	WHITE
BK	BLACK
PK	PINK

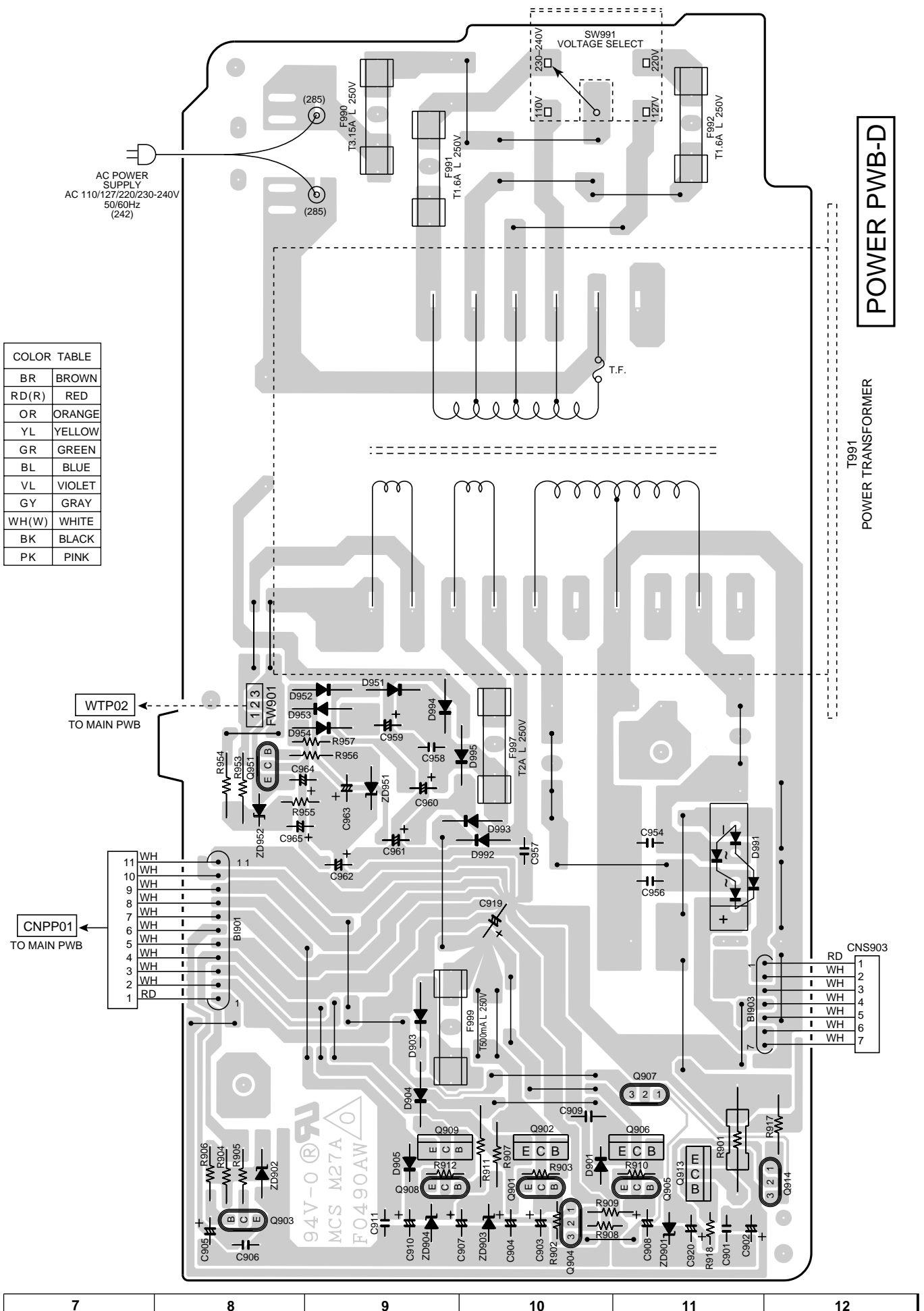


Figure 45 WIRING SIDE OF P.W.BOARD (9/9)

TROUBLESHOOTING

When the CD does not function

When the CD section does not operate When the objective lens of the optical pickup is dirty, this section may not operate. Clean the objective lens, and check the playback operation. When this section does not operate even after the above step is taken, check the following items.

Remove the cabinet and follow the troubleshooting instructions.

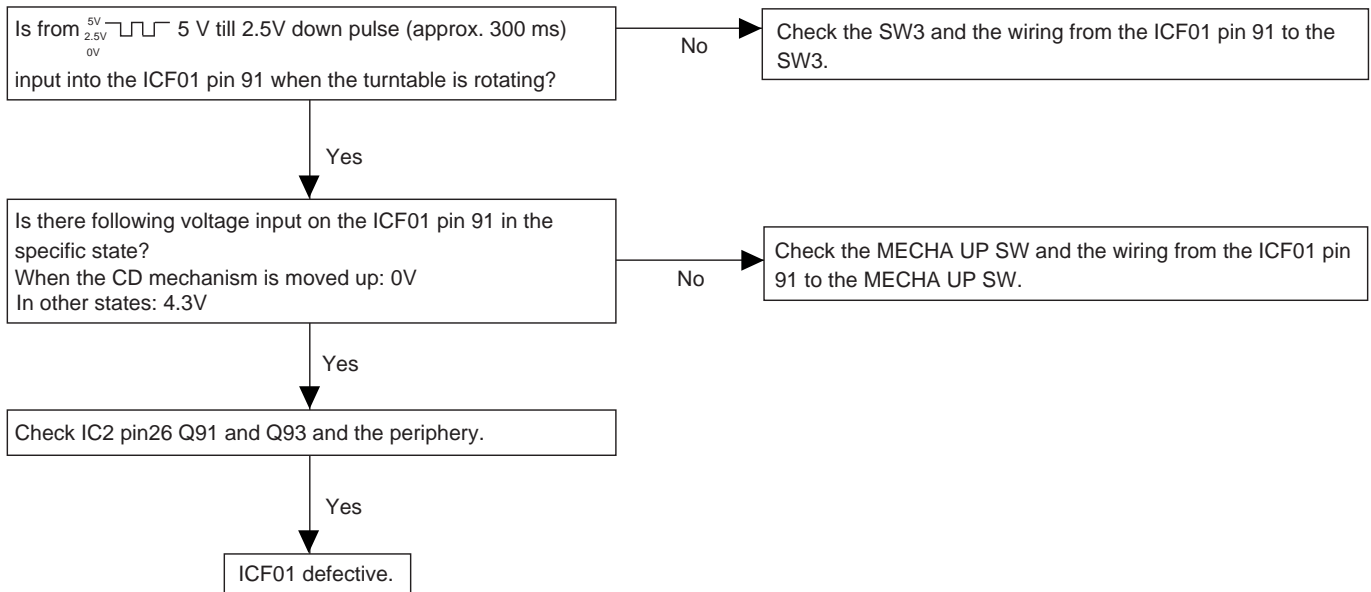
"Track skipping and/or no TOC (Table Of Contents) may be caused by build up of dust or other foreign matter on the laser pickup lens. Before attempting any adjustment make certain that the lens is clean. If not, clean it as mentioned below."

Turn the power off.

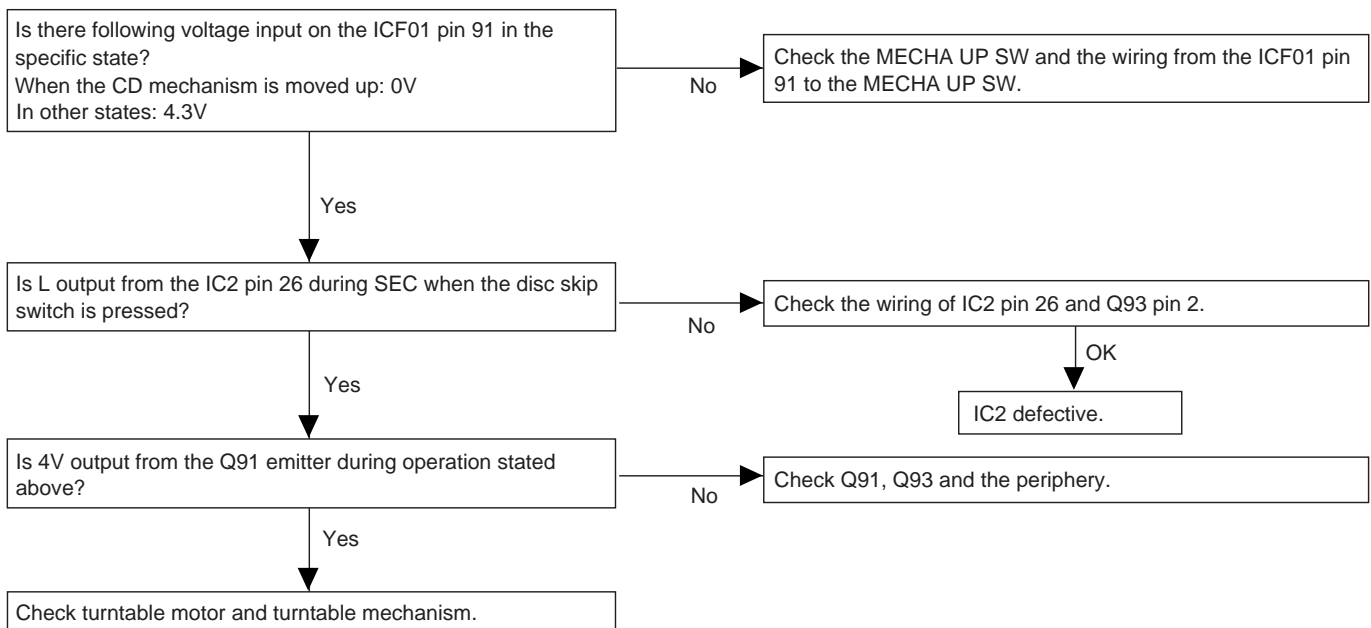
Gently clean the lens with a lens cleaning tissue and a small amount of isopropyl alcohol.

Do not touch the lens with the bare hand.

• When the turntable fails to stop.



• When turntable fails to move.



• When the CD tray fails to open or close.

Is there following voltage input in specific state of ICF01 pin 93?
 Open state: 0V
 Close state: 0V
 Intermediate state between open state and close state: 4.3V

No

Check the OPEN CLOSE SW and the wiring from the ICF01 pin 93 to the OPEN CLOSE SW.

Yes

Is H output to IC2 pin 24 or 25 for 7 seconds when the OPEN/CLOSE key is pressed? IC81 is defective. Replace it.

No

Check the wiring of the IC2 pins 24 and 25, IC81 pins 1 and 3.

OK

IC2 defective.

Yes

Is 4V output between IC81 pins 3 and 7 during operation stated above?

No

Check the periphery of IC81.

OK

IC81 defective.

Yes

Check the loading motor (M1) and the loading mechanism.

• The CD function will not work.

The CD operating keys don't work.

Yes

Check the CD, DSP, power supply, and 16.93 MHz clock, and reset terminal.

Yes

Check the waveform of SCK, SO (DATA) and SI (COMM).

Yes

See if the pick-up is the in PICKUP IN SW position.

Yes

If the items mentioned above are OK, check the main microcomputer ICF01.

• The CD operating keys work.

Check the Focus - HF system.

Playback can be performed without a disc.

Yes

Does the pick-up move up and down twice?

Yes

Focus search OK

No

Does the output waveform of IC1(16)(FD) match that shown in Fig. 47?

Yes

Check the area around IC3-CNP2.

No

Check the IC1(50)(CLK) line, 4MHz.
 Check the microcomputer data on pins (51)(CL), (52)(DAT) and (53)CE.

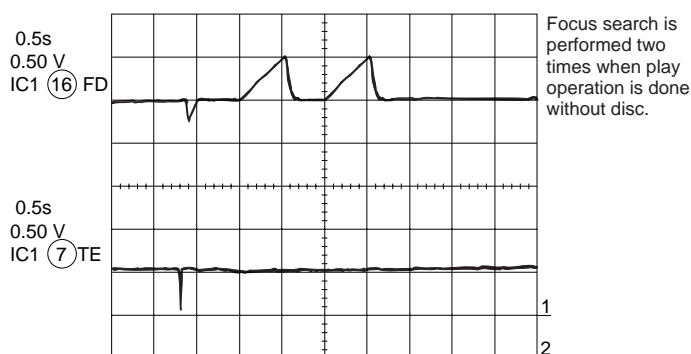
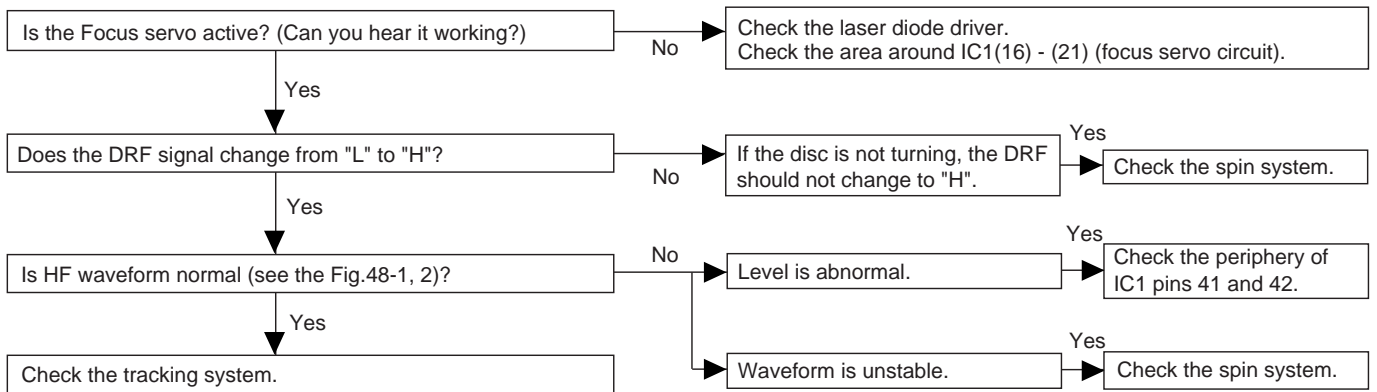


Figure 47

CD-C449W/K449W

- Playback can only be performed when a disc is loaded.



HF
1.0V/DIV
0.5μsec/DIV(DC)
(When playing back the disc)

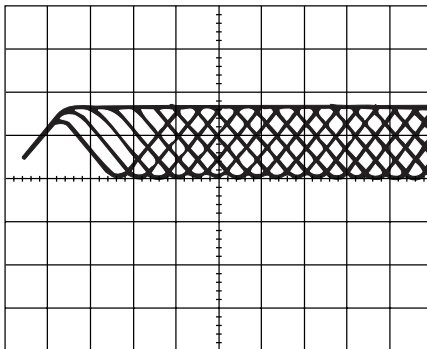


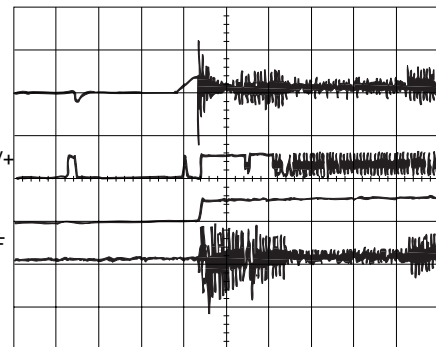
Figure 48-1

0.5s
1.00 V
IC1 (16) FD

0.5s
10.0 V
IC2 (13) CLV+

0.5s
10.0 V
IC1 (54) DRF

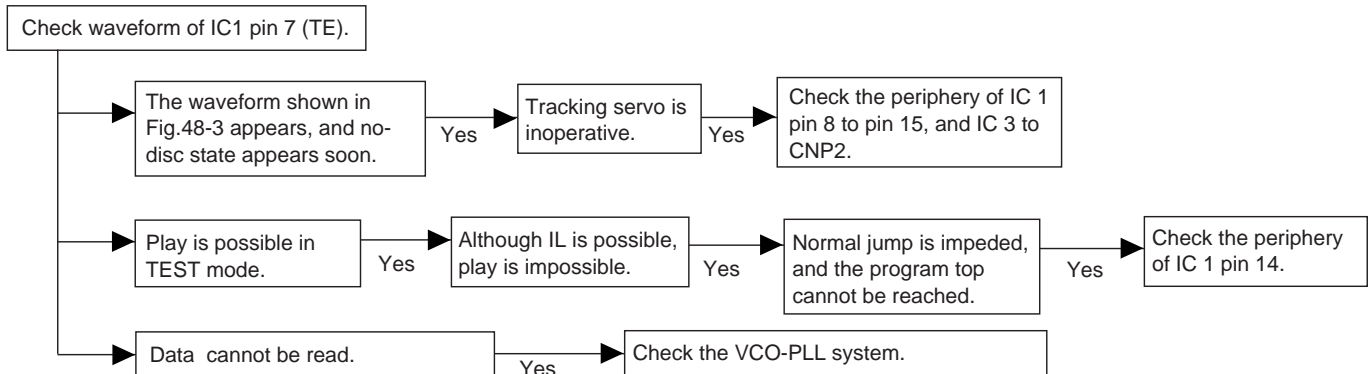
0.5s
2.00 V
IC1 (7) TE



Waveform in case of normal play-back

Figure 48-2

- Check the tracking system.



5ms
1.00 V
IC1 (7) TE

5 ms
5.0 V
IC1 (54) DRF

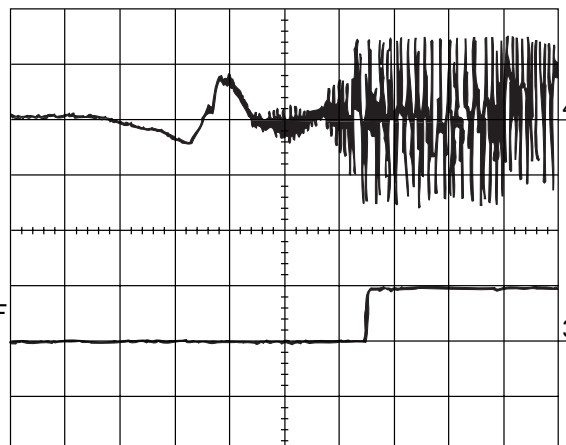


Figure 48-3

• Checking the spin system.

Play operation is performed without disc.

Yes

The turntable rotates a little.

Yes

The spin driver circuit is normal.

No

The turntable fails to rotate or rotates at high speed.

Yes

Check the periphery of IC1 pins 23 to 27, pin 39, and pin 40, IC2 pin 12 and pin 13, IC5 to CNP3.

• Checking the VCO-PLL system

Play operation is performed when disc exits.

Yes

Although HF waveform is normal, TOC data cannot be read.

Yes

Check PDO waveform (Fig. 49).

Abnormal

Check the IC1 pins 43 and 44, IC2 pins 3, 5, 7, 10, and 11.

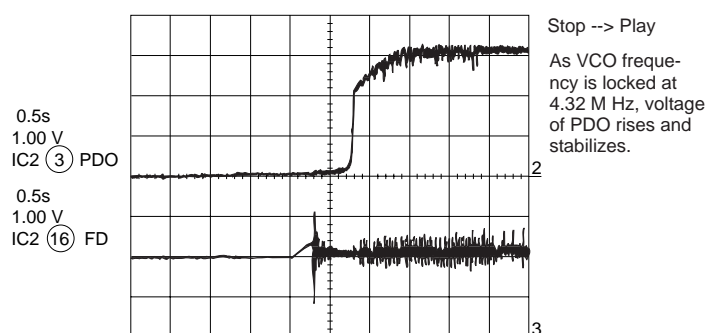


Figure 49

• Although HF waveform is normal and the time indication is normal, no sound is emitted.

Check IC 2 pin 48 (EFLG).

No

Usually, the number of pulses of flawless disc is 100 pulses/sec or less.

Yes

Check IC2 pins 37, 40.

Abnormal

Check IC 401 and POWER AMP ICV01 and ICX01.

FUNCTION TABLE OF IC

IC2 VHiLC78622K-1: Servo/Signal Control (LC78622K) (1/2)

Pin No.	Terminal Name	Input/Output	Function	
1	DEFI	Input	Input terminal of defect detection signal (DEF). (Connected to OV when not used.)	
2	TAI	Input	For PLL	Input terminal for test. Pull-down resistor is integrated. Surely connected to OV.
3	PDO	Output		Output terminal of phase comparison for external VCO control.
4	VVSS	—		Ground terminal for integrated VCO. Surely connected to OV.
5	ISET	Input		Resistance connection terminal for current adjustment of PDO output.
6	VVDD	—		Power terminal for integrated VCO.
7	FR	Input		VCO frequency range adjustment.
8	VSS	—	Ground terminal of digital system. Surely connected to OV.	
9	EFMO	Output	For slice level control	EFM signal output terminal.
10	EFMIN	Input		EFM signal input terminal.
11	TEST2	Input	Input terminal for test. Pull-down resistor is integrated. Surely connected to OV.	
12	CLV+	Outout	Output for disk motor control. 3 values can be output with the commands.	
13	CLV-	Output	Output for disk motor control. 3 values can be output with the commands.	
14	V/P	Output	Monitor output terminal for automatic switch of rough servo/phase control. "H" for rough servo, and "L" for phase servo.	
15	HLF	Intput	Input terminal of track detection signal. Schmit input.	
16	TES	Input	Input terminal of tracking error signal. Schmit input.	
17	TOFF	Output	Tracking OFF output terminal.	
18	TGL	Output	Output terminal for switch of tracking gain "L" increases the gain.	
19	JP+	Output	Output for track jump control. 3 values can be output with the commands.	
20	JP-	Output	Output for track jump control. 3 values can be output with the commands.	
21*	PCK	Output	Clock monitor terminal for EFM data replay. 4,3218MHz as the phase clock.	
22*	FSEQ	Output	Output terminal synchronous signal detection. "H" is output when synchronous signal detected by EFM signal matches synchronous signal internally generated.	
23	VDD	—	Power terminal of digital system.	
24	CONT1	Input/Output	General purpose input/output terminal 1	Controlled with serial data command from micro computer. When not used, set it as the input terminal and open it by connecting to OV, or set it as the output terminal and open it.
25	CONT2	Input/Output	General purpose input/output terminal 2	
26	CONT3	Input/Output	General purpose input/output terminal 3	
27	CONT4	Input/Output	General purpose input/output terminal 4	
28*	CONT5	Input/Output	General purpose input/output terminal 5	
29*	EMPH	Output	Difference monitor terminal At "H", deemphasis disk is being replayed.	
30*	C2F	Output	C2 flag output terminal.	
31	DOUT	Output	Output terminal of digital OUTPUT. (EIAJ format)	
32*	TEST3	Input	Input terminal for test. Pull-down resistor is integrated. Surely connected to OV.	
33	TEST4	Input	Input terminal for test. Pull-down resistor is integrated. Surely connected to OV.	
34	N.C.	—	Terminal not used. Open during operation.	
35*	MUTEL	Output	L channel 1 bit DAC	Mute output terminal for L channel.
36	LVDD	—		Power terminal for L channel.
37	LCHO	Output		L channel output terminal.
38	LVSS	—		Ground terminal for L channel Surely connected to OV.
39	RVSS	—	R channel 1 bit DAC	Ground terminal for R channel Surely connected to OV.
40	RCHO	Output		R channel output terminal.
41	RVDD	—		Power terminal for R channel.
42*	MUTER	Output		Mute output terminal for R channel.
43	XVDD	—	Power terminal for quartz oscillation.	
44	XOUT	Output	Ground terminal of 16.9344 MHz quartz oscillator.	
45	XIN	Input	Ground terminal of 16.9344 MHz quartz oscillator.	
46	XVSS	—	Ground terminal for quartz oscillation. Surely connected to OV.	
47*	SBSY	Output	Output terminal of synchronous signal of subcode block.	
48*	EFLG	Output	Correction monitor terminal of C1, C2, single and double.	

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC2 VHiLC78622K-1: Servo/Signal Control (LC78622K) (2/2)

Pin No.	Terminal Name	Input/Output	Function
49*	PW	Output	Output terminal of subcodes P, A, R, S, T, U and W.
50*	SFSY	Output	Output terminal of synchronous signal of subcode frame. It drops when subcode stands by.
51	SBCK	Input	Clock input terminal to read subcode. Schmit input (Connected to 0V when not used.)
52*	FSX	Output	Output terminal of synchronous signal of 7.35kHz divided from quartz oscillation.
53	WRQ	Output	Output terminal to stand by output of subcode Q.
54	RWC	Input	Input terminal of read/write. Schmit input.
55	SQOUT	Output	Output terminal of subcode Q.
56	COIN	Input	Command input terminal from microcomputer.
57	CQCK	Input	Clock input terminal to fetch command input, or pick up subcode from SQOUT. Schmit input
58	RES	Input	Reset input terminal of LC78622. When turning on power, set it at "L".
59*	TEST11	Output	Output terminal for test. Used in the open state ("L" output as ordinary).
60*	16M	Output	Output terminal of 16.9344Hz.
61	4.2M	Output	Output terminal of 4.2336MHz.
62	TEST5	Input	Input terminal for test Pull-down resistor is integrated. Surely connected to 0V.
63	CS	Input	Chip selection input terminal. Pull-down resistor is integrated. Connected to 0 when not controlled.
64	TEST1	Input	Input terminal for test Pull-down resistor is integrated. Surely connected to 0V.

Note: The same potential must be supplied to the power terminals (VDD, VVDD, LVDD, RVDD, XVDD).

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

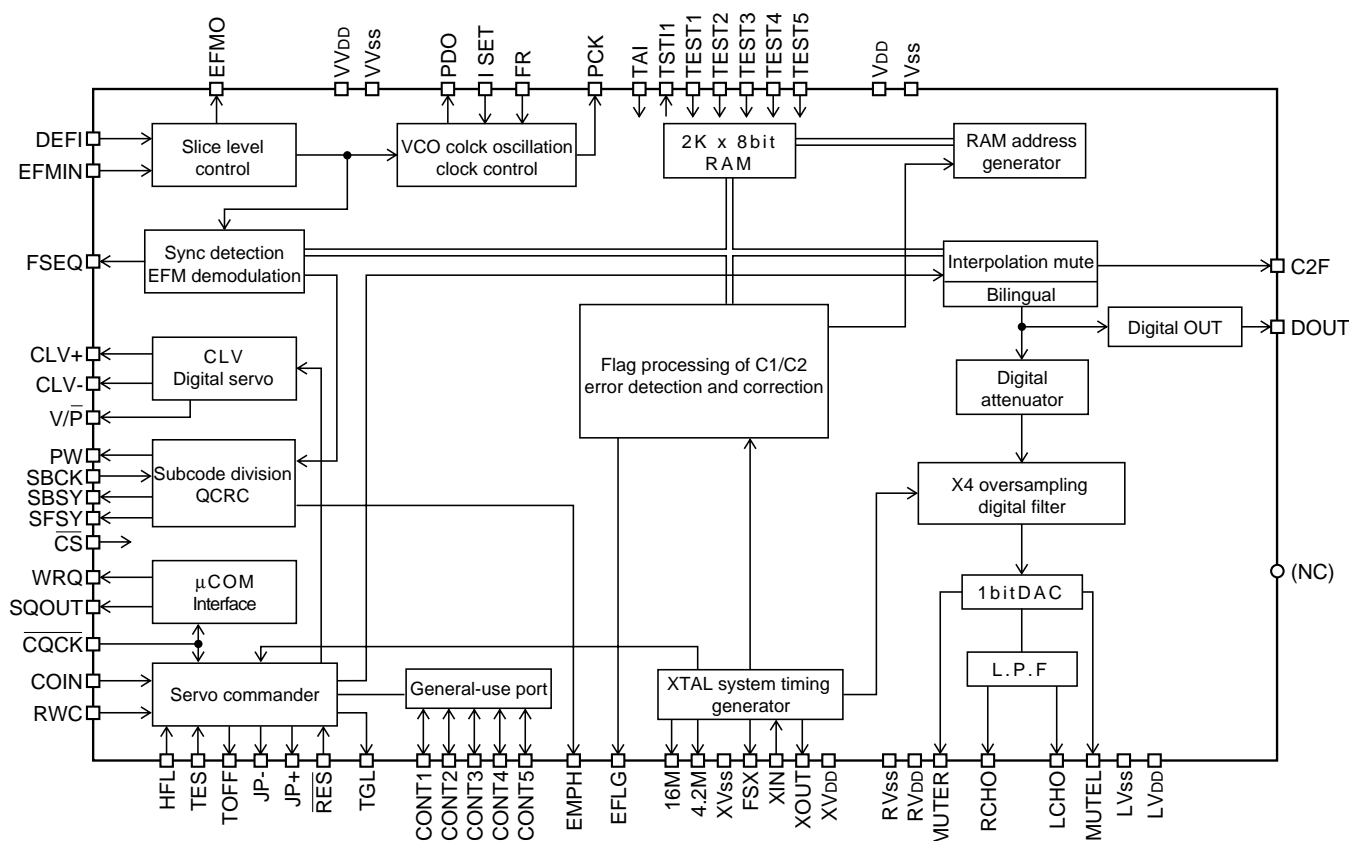


Figure 51 BLOCK DIAGRAM OF IC

CD-C449W/K449W

IC1 VHiLA9241M/-1: Servo Amp. (LA9241M) (1/2)

Pin No.	Port Name	Function
1	FIN2	Connection pin for photodiode of pickup. RF signal is generated through addition with FIN pin, and FE signal is generated through subtraction.
2	FIN1	Connection pin for photodiode of pickup.
3	E	Connection pin for photodiode of pickup. TE signal is generated through subtraction with F pin.
4	F	Connection pin for photodiode of pickup.
5	TB	Pin for input of DC component of TE signal.
6	TE-	Pin to connect gain setting resistor of TE signal to TE signal.
7	TE	TE signal output pin.
8	TESI	TES (Track error sense) comparator input pin. TE signal is band-passed and input.
9	SCI	Input pin for shock detection.
10	TH	Pin to set time constant of tracking gain.
11*	TA	TA amplifier output pin.
12	TD-	Pin to compose tracking phase compensation constant between TD and VR pins.
13	TD	Pin to set tracking phase compensation.
14	JP	Pin to set amplitude of tracking jump signal (kick pulse).
15	TO	Tracking control signal output pin.
16	FD	Focusing control signal output pin.
17	FD-	Pin to compose focusing phase compensation constant between FD and FA pins.
18	FA	Pin to compose focusing phase compensation constant between FD-/FA-pins.
19	FA-	Pin to compose focusing phase compensation constant between FA and FE pins.
20	FE	Output pin of FE signal.
21	FE-	Pin to connect gain setting resistor of FE signal across TE pin.
22	AGND	GND for analog signal.
23	NC	No connect.
24	SPI	Spindle amplifier input.
25	SPG	Pin to connect gain setting resistor in the 12cm mode of spindle.
26	SP-	Pin to connect spindle phase compensation constant together with SPD pin.
27	SPD	Spindle control signal output pin.
28	SLEQ	Pin to connect thread phase compensation constant.
29	SLD	Thread control signal output pin.
30	SL-	Input pin of thread feed signal from micro computer.
31	SL+	Input pin of thread feed signal from micro computer.
32	JP-	Input pin of tracking jump signal from DSP.
33	JP+	Input pin of tracking jump signal from DSP.
34	TGL	Input pin of tracking gain control signal from DSP. TGL = Gain low at "H"
35	TOFF	Input pin of tracking off control signal from DSP. TOFF = Off at "H"
36	TES	Output pin of TES signal to DSP.
37	HFL	(HIGH FREQUENCY LEVEL) is used to judge whether main beam is positioned on the bit or on the mirror.
38	SLOF	Thread servo off control input pin.
39	CV-	Pin to input CLV error signal from DSP.
40	CV+	Pin to input CLV error signal from DSP.
41	RFSM	RF output pin.
42	RFS-	Pin to set gain of RF and set 3T compensation constant together with RFSM pin.
43	SLC	(SLICE LEVEL CONTROL) is the output pin to control of the level of the data slice with RF waveform DSP.
44	SLI	Input pin to control the level of data slice with DSP.
45	DGND	GND pin in the digital system.
46	FSC	Output pin for focus search smoothening capacitor.
47	TBC	(Tracking Balance Control) Pin to set EF balance variable range.
48*	NC	No connect.
49	DEF	Defect detection output pin of disk.
50	CLK	Reference clock input pin. 4.23MHz of DSP is input.

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

IC1 VHiLA9241M/-1: Servo Amp. (LA9241M) (2/2)

Pin No.	Port Name	Function
51	CL	Micro computer command clock input pin.
52	DAT	Micro computer command data input pin.
53	CE	Micro computer command chip enable input pin.
54	DRF	(DETECT RF) RF level detection output.
55	FSS	(Focus Serch Select) Pin to switch focus search mode. (\pm search/+ search for reference voltage)
56	VCC2	VCC pin for servo system and digital system.
57	REFI	Pin to connect pass control for reference voltage.
58	VR	Reference voltage output pin.
59	LF2	Pin to set defect detection time constant of disk.
60	PH1	Pin to connect capacitor for peak hold of RF signal.
61	BH1	Pin to connect capacitor for bottom hold of RF signal.
62	LDD	APC circuit output pin.
63	LDS	APC circuit output pin.
64	VCC1	RF system VCC pin.

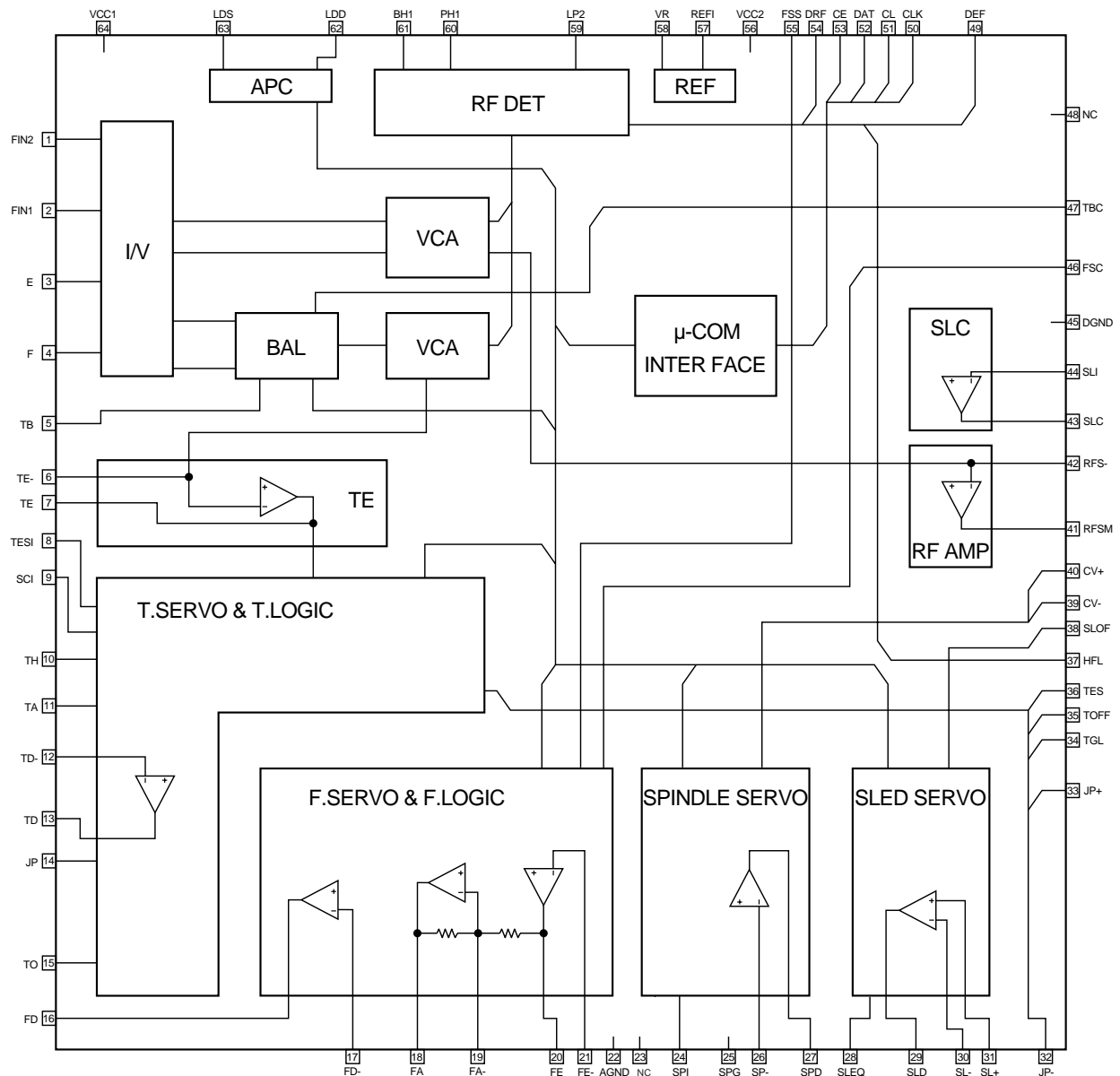


Figure 53 BLOCK DIAGRAM OF IC

CD-C449W/K449W

ICF01 RH-iX0235AWZZ: System Microcomputer (IX0235AW)

Pin No.	Port Name	Input/Output	Function
1,2	P00-P01	Input/Output	8-Bit input/output port. Input/output can be specified in 4-bit units HOLD release input. Port 0 interrupt input
3-10	P10-P17	Input/Output	8-Bit input/output port. Input/output can be specified in 1-bit units Dual-purpose function P10: SIO0 data output P11: SIO0 data input input/bus input/output P12: SIO0 clock input/output P13: SIO1 data output P14: SIO1 data input input/bus input/output P15: SIO1 clock input/output P16: BUZ output P17: Timer 1 output (PWM output)
11	P70	Input/Output	6-Bit input port. Dual-purpose function P70: INT0 input/HOLD release input/Nch-Tr. Output for watchdog timer
12	RES	Input	Reset terminal
13	XT1/P74	Input	Input terminal for 32.768 KHz crystal oscillator Connected to VDD when not used Dual-purpose function General-purpose input port P74
14	XT2/P75	Output	Output terminal for 32.768 KHz crystal oscillator Open when not use Dual-purpose function General-purpose input port P75
15	VSS1	—	Negative power terminal
16	CF1	Input	Input terminal for ceramic oscillator
17	CF2	Output	Output terminal for ceramic oscillator
18	VDD1	—	Positive power terminal
19-26	P80-P87	Input	8-Bit input port. Dual-purpose function AD input port (8 pcs.)
27-29	P71-73	Input	6-Bit input port. Dual-purpose function P71: INT1 input/HOLD release input P72: INT2 input/timer 0 event input P73: INT3 input (input with noise filter)/ timer 0 event input
30-37	S0/PA0-S7/PA7	Input/Output	Segment output terminal for LCD display Usable as general-purpose input/output port (PA)
38-45	S8/PB0-S15/PB7	Input/Output	Segment output terminal for LCD display Usable as general-purpose input/output port (PB)
46-53 (48*,51*,53*)	S16/PC0-S23/PC7	Input/Output	Segment output terminal for LCD display Usable as general-purpose input/output port (PC)
54,55 (55*)	S24/PD0-S25/PD1	Input/Output	Segment output terminal for LCD display Usable as general-purpose input/output port (PD)
56	VDD2	—	Positive power terminal
57	VSS2	—	Negative power terminal
58-63 (58*-60*)	S26/PD2-S31/PD7	Input/Output	Segment output terminal for LCD display Usable as general-purpose input/output port (PD)
64-71 (66*)	S32/PE0-S39/PE7	Input/Output	Segment output terminal for LCD display Usable as general-purpose input/output port (PE)
72-79 (74*,78*)	S40/PF0-S47/PF7	Input/Output	Segment output terminal for LCD display Usable as general-purpose input/output port (PF)
80-82	V1/PL4-V3/PL6	Input	Bias power terminal for LCD drive Usable as general-purpose input/output port (PL)
83-86	COM0/PL0-COM3/PL3	Input/Output	Common output terminal for LCD display Usable as general-purpose input/output port (PL)
87*,88*	P30-P31	Input/Output	6-Bit input/output port. Input/output can be specified in 1-bit units
89	VSS3	—	Negative power terminal
90	VDD3	—	Positive power terminal
91-94 (94*)	P32-P35	Input/Output	6-Bit input/output port. Input/output can be specified in 1-bit units
95-100 (95*,96*,99*)	P02-P07	Input/Output	8-Bit input/output port. Input/output can be specified in 4-bit units HOLD release input. Port 0 interrupt input

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

ICD01 RH-IX0234AWZZ: System Microcomputer (IX0234AW) (1/2)

Pin No.	Port Name	Input/Output	Function
1-2 (1*,2)	P16-P17	Input/Output	8-Bit input/output port. Input/output can be specified in 1-bit units Dual-purpose function P16: BUZ output P17: Timer 1 output (PWM output)
3-10 (5*-7*)	P30-37	Input/Output	8-Bit input/output port. Input/output can be specified in 1-bit units Dual-purpose function Nchannel open output: 15V withstand rating
11	P70	Input/Output	4-Bit input/output port. Input/output can be specified in 1-bit units. 2-Bit input port. Dual-purpose function P70: INT0 input/HOLD release input/Nch-Tr. Output for watchdog timer
12	RES	Input	Reset terminal
13	XT1/P74	Input	Input terminal for 32.768 KHz crystal oscillator Connected to VDD when not used Dual-purpose function General-purpose input port P74
14	XT2/P75	Output	Output terminal for 32.768 KHz crystal oscillator Dual-purpose function General-purpose input port P75 When not use. (Oscillation specification) Open. (Port specification) Connect to VDD1.
15	VSS1	—	Negative power terminal
16	CF1	Input	Input terminal for ceramic oscillator
17	CF2	Output	Output terminal for ceramic oscillator
18	VDD1	—	Positive power terminal
19-22	P80-P83	Input	4-Bit input/output port. Input/output can be specified in 1-bit units. 4-Bit input port. Dual-purpose function AD input port (8 pcs.)
23-27	P84-P87	Input	4-Bit input/output port. Input/output can be specified in 1-bit units. 4-Bit input port. Dual-purpose function AD input port (8 pcs.)
27-29	P71-73	Input	4-Bit input/output port. Input/output can be specified in 1-bit units. 4-Bit input port. Dual-purpose function P71: INT1 input/HOLD release input P72: INT2 input/timer 0 event input P73: INT3 input (input with noise filter)/ timer 0 event input
30-36 (30*-32*)	S0/T0- S6/T6	Output	Fluorescent character display tube (VFD) display controller Segment/timing shared output
37-45	S7/T7- S15/T15	Input/Output	Fluorescent character display tube (VFD) display controller Segment/timing shared output Pull-down resistance built-in output
46	VDD3	—	Positive power terminal
47-50	S16-S20	Input/Output	Fluorescent character display tube (VFD) display controller Segment output Dual-purpose function S16: High voltage withstand input port PC0 S17: High voltage withstand input port PC1 S18: High voltage withstand input port PC2 S19: High voltage withstand input port PC3 S20: High voltage withstand input port PC4
51	VP	—	Negative power terminal (Independent power supply only for fluorescent character display tube drive output) (Power supply for pull-down resistors)
52-63	S21-S31	Input/Output	Fluorescent character display tube (VFD) display controller Segment output Dual-purpose function S21: High voltage withstand input port PC5 S22: High voltage withstand input port PC6 S23: High voltage withstand input port PC7 S24: High voltage withstand input port PD0 S25: High voltage withstand input port PD1 S26: High voltage withstand input port PD2 S27: High voltage withstand input port PD3 S28: High voltage withstand input port PD4 S29: High voltage withstand input port PD5 S30: High voltage withstand input port PD6 S31: High voltage withstand input port PD7

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

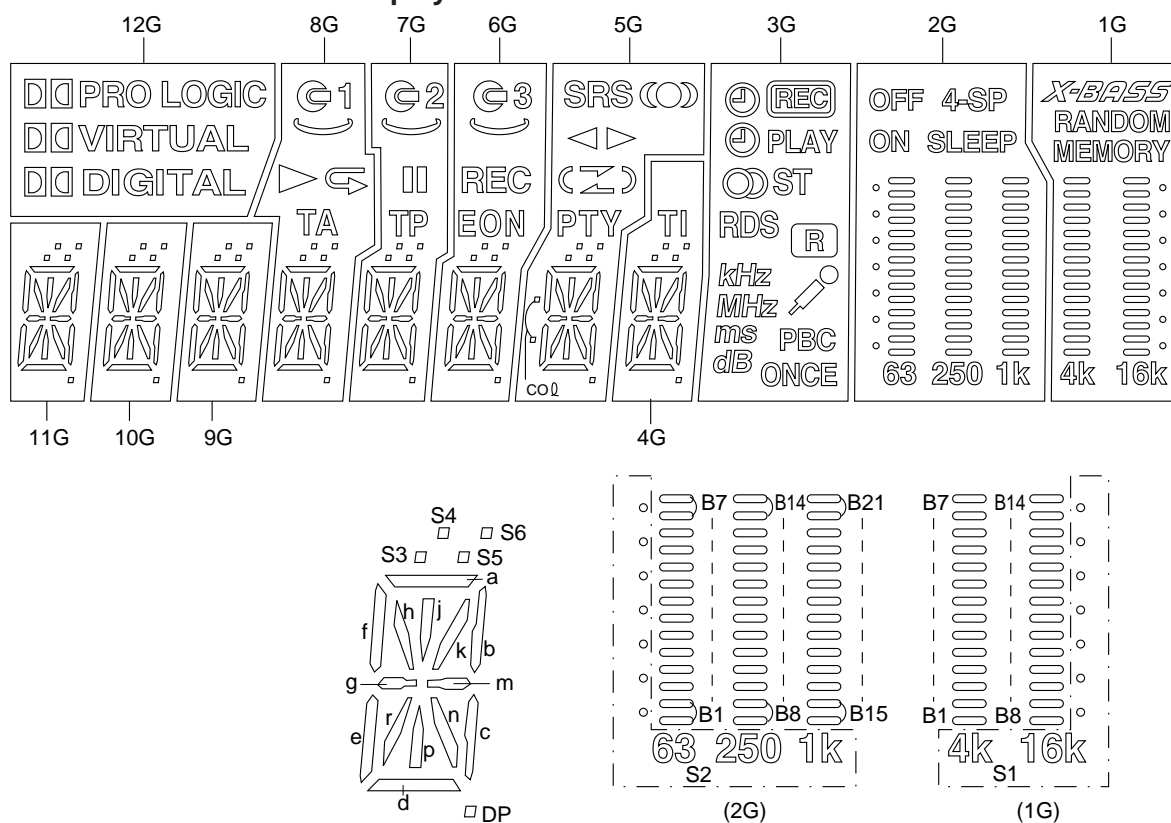
CD-C449W/K449W

ICD01 RH-iX0234AWZZ: System Microcomputer (IX0234AW) (2/2)

Pin No.	Port Name	Input/Output	Function
64-71	S32-S39	Input/Output	Fluorescent character display tube (VFD) display controller Segment output Dual-purpose function S32: High voltage withstand input port PE0 S33: High voltage withstand input port PE1 S34: High voltage withstand input port PE2 S35: High voltage withstand input port PE3 S36: High voltage withstand input port PE4 S37: High voltage withstand input port PE5 S38: High voltage withstand input port PE6 S39: High voltage withstand input port PE7
72	VDD4	—	Positive power terminal
73-80 (76*-78*)	S40-S47	Input/Output	Fluorescent character display tube (VFD) display controller Segment output Dual-purpose function S40: High voltage withstand input port PF0 S41: High voltage withstand input port PF1 S42: High voltage withstand input port PF2 S43: High voltage withstand input port PF3 S44: High voltage withstand input port PF4 S45: High voltage withstand input port PF5 S46: High voltage withstand input port PF6 S47: High voltage withstand input port PF7
81-84	S48-S51	Input/Output	Fluorescent character display tube (VFD) display controller Segment output Dual-purpose function S48: High voltage withstand input port PG0 S49: High voltage withstand input port PG1 S50: High voltage withstand input port PG2 S51: High voltage withstand input port PG3
85-88	P00-P03	Input/Output	8-Bit input/output port. Input/output can be specified in 4-bit units. HOLD release input. Port 0 interrupt input N channel open output: 15V withstand rating
89	VSS2	—	Negative power terminal
90	VDD2	—	Positive power terminal
91-94	P04-P07	Input/Output	8-Bit input/output port. Input/output can be specified in 4-bit units. HOLD release input. Port 0 interrupt input N channel open output: 15V withstand rating
95-100 (98*-100*)	P10-P17	Input/Output	8-Bit input/output port. Input/output can be specified in 1-bit units Dual-purpose function P10: SIO0 data output P11: SIO0 data input input/bus input/output P12: SIO0 clock input/output P13: SIO1 data output P14: SIO1 data input input/bus input/output P15: SIO1 clock input/output P16: BUZ output P17: Timer 1 output (PWM output)

In this unit, the terminal with asterisk mark (*) is (open) terminal which is not connected to the outside.

FLD01 : VVKBJ614GK/-1 FL Display



	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	PRO LOGIC	-	-	-	G1	G2	G3	SRS	-	REC	OFF	X-BASS
P2	VIRTUAL	-	-	-	G1	G2	G3	SRS	-	PLAY	4-SP	RANDOM
P3	DIGITAL	-	-	-	G1	G2	G3	SRS	-	ST	ON	MEMORY
P4	-	-	-	-	G1	G2	G3	SRS	-	ST	SLEEP	-
P5	-	-	-	-	G1	G2	G3	SRS	-	ST	SLEEP	-
P6	-	-	-	-	G1	G2	G3	SRS	-	ST	SLEEP	-
P7	-	-	-	-	G1	G2	G3	SRS	-	ST	SLEEP	-
P8	-	S6	S6	S6	S6	S6	S6	S6	S6	R	B7	B7
P9	-	S4	S4	S4	S4	S4	S4	S4	S4	kHz	B6	B6
P10	-	S5	S5	S5	S5	S5	S5	S5	S5	MHz	B13	B13
P11	-	S3	S3	S3	S3	S3	S3	S3	S3	ms	B20	-
P12	-	a	a	a	a	a	a	a	a	PBC	B5	B5
P13	-	h	h	h	h	h	h	h	h	dB	B12	B12
P14	-	j	j	j	j	j	j	j	j	ONCE	B4	B4
P15	-	k	k	k	k	k	k	k	k	-	B11	B11
P16	-	b	b	b	b	b	b	b	b	-	B18	-
P17	-	f	f	f	f	f	f	f	f	-	B3B	B3
P18	-	m	m	m	m	m	m	m	m	-	B10	B10
P19	-	g	g	g	g	g	g	g	g	-	B17	-
P20	-	c	c	c	c	c	c	c	c	-	B2	B2
P21	-	e	e	e	e	e	e	e	e	-	B9	B9
P22	-	r	r	r	r	r	r	r	r	-	B16	-
P23	-	p	p	p	p	p	p	p	p	-	B1	B1
P24	-	n	n	n	n	n	n	n	n	-	B8	B8
P25	-	d	d	d	d	d	d	d	d	-	B15	-
P26	-	DP	DP	DP	DP	DP	DP	DP	DP	-	S2	S1
P27	-	-	-	-	-	-	-	-	-	-	-	-

PIN No.	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24
CONNECTION	F2	F2	NP	NP	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	P27	P26	P25	P24	P23	P22	P21	P20

PIN No.	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	P19	P18	P17	P16	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NP	F1	F1

Figure 57 FL DISPLAY